2010 Water Levels

Contents

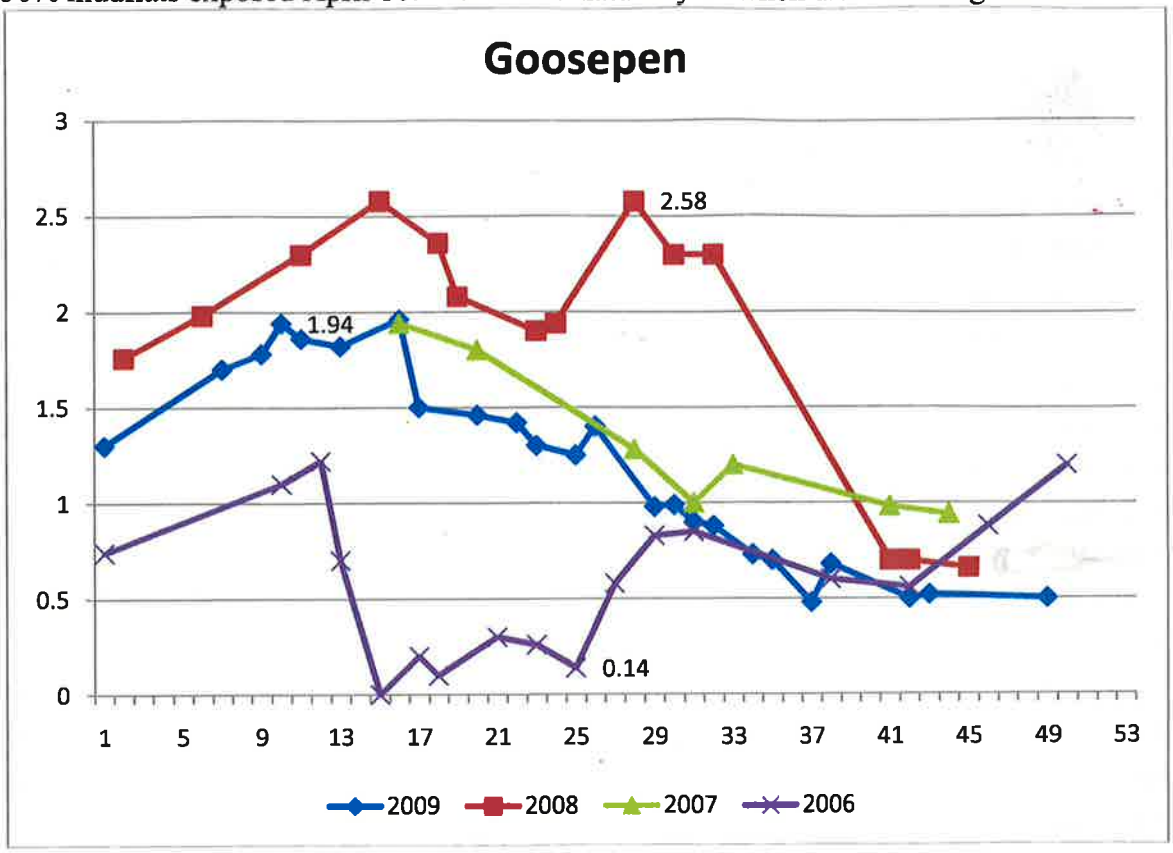
(need to Fix blind)

Unit: Goose Pen

Acres: 57

2009 Activity: Unit was at full pool in March. High water was let out in April. Strong winds took more water off than intended. Water was low for rest of year. High lake levels allowed some water to be added in September.

Draw Down Years: 2009- low water allowed evapotranspiration to expose mudflats on high ground areas in September (0.48); 2006 – March through September draw down. 50% mudflats exposed April 10. Reflooded naturally or when ditch was high in Oct.



Unit Goal: Provide foraging and resting habitat for migratory birds.

Objectives: Control exotic flowering rush and purple loosestrife. Encourage more desirable vegetation. Put in a rotation for fall shorebird habitat.

Strategies:

Draw down for early May shorebird habitat. Reflood for fall waterfowl migration.

Management Strategy Constraints: The east dike is in bad shape. There is a French drain under the road that goes to the check station that allows the ditch next to Magee's entrance road and shop to drain. When the unit is too high, water backs up and threatens the Magee shop/garage. The culvert under our entrance road is too small and water backs up in the drainage ditch and floods Magee's entrance road and prevents Goosepen from draining. 2.0 is full pool & will begin flooding state.

Repairs Needed:

II. East dike in bad shape, and portions of west dike.

Unit: **Goose Pen:** 2.0 is full pool (1' free board on east dike – dike in bad shape)

Desired water level		Wk #	2010 Date	Actual Water level Staff reading		Notes
old	new			old	new	
			Jan.			
			Feb.			
2.0						
		10	Mar. 9	0.04		
		13	3/29	1.20		
		13	Apr.			Draw down for May shorebird habitat – portable pump
			14	1.28		Opened 2"
			26	1.34		Pumping down w/ House 4/27 - house broke, using thompson
			29	1.0		Pumping w/ Thompson. When possible, using 2 thompsons
0.5			May 6	0.6		21 - Pump off.
			26	0.46		
			June 1	0.40		
			11	0.44		
			15	0.41		18th 0.39
			July 2	0.30		
			20	0.24		
			Aug. 6	0.18		
			23	0.18		
			31	0.5		
		35	Sept.			Reflood - Watch For high Lake levels
			Oct. 9	—		Below gauge, no water to reflood
			Nov. 9			Set camel pump on states ditch to add H_2O to Goose pen
						Not enough H_2O. No pumping, No for lake H_2O either
			16			
			Dec. 9	.28		

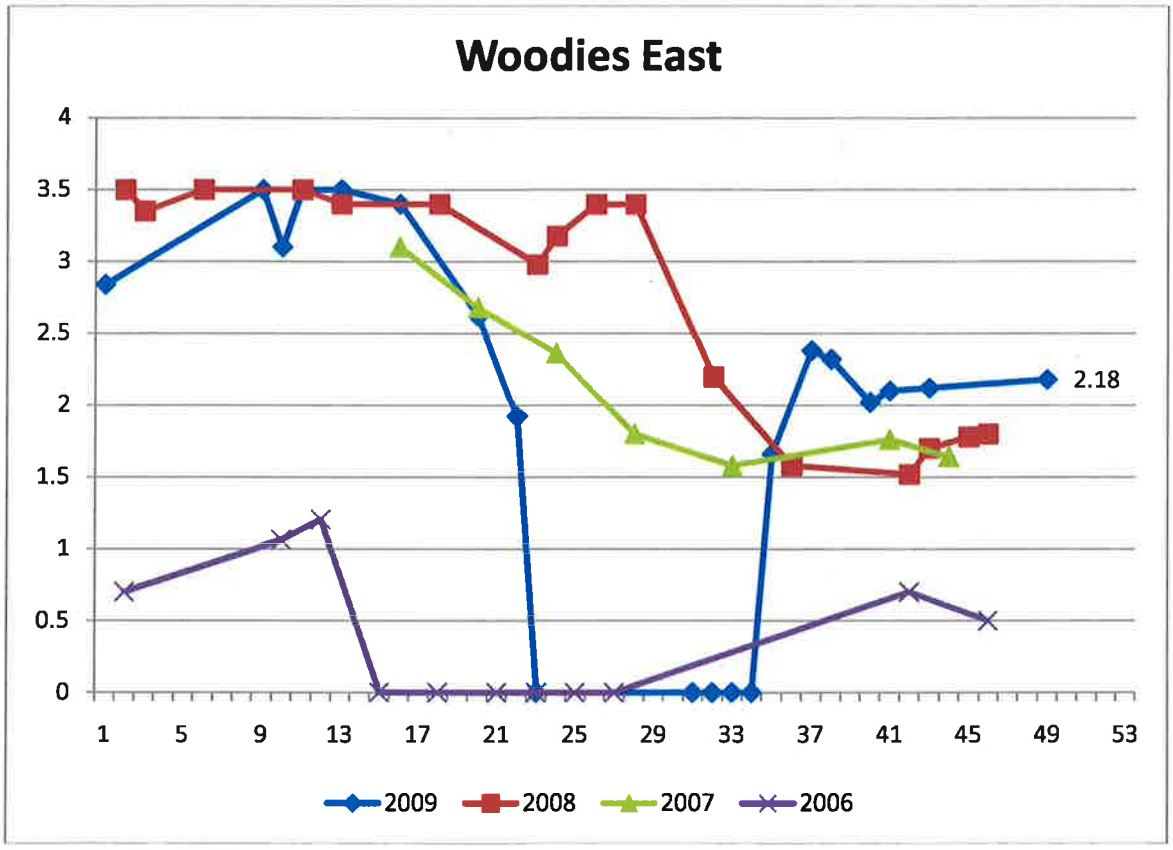
2011 - Get H_2O

Unit: Woodies Roost East

Acres:

2009 Activity: This unit was drawn down in Mid April and completed by May 30th for construction on the woodies east/west divider dike. The unit was dry by June. The screw gate on the north to the states ditch was replaced b/c the pipe was rotten. Great millet germination. The unit was reflooded in August with the cooperation & assistance of Magee. Construction was not conducted due to RO failure to bid project.

Draw Down Years: 2009 – drawn down mid April, completed by May 30th, flood mid Aug; 2006 – drawn down mid march, completed mid April. Reflooded in Aug.



Unit Goals: Provide foraging habitat and cover for wading birds and waterfowl.

Objectives: Manage for hemi marsh conditions and watch invasives

Strategies: Divider dike possibly scheduled for repair. Draw unit down depending on construction.

Potential Problems: Beaver, ~~leaking gate on north side~~ (fixed in 2009), coordinating management with Magee's activities may require timing adjustments, This unit has a watershed to the south & will gain more water during rain events.

Repairs Needed:

II. North half of divider dike between west and south woodies needs rebuilt & raised.

Unit: **Woodies Roost East –**

Desired water level		Wk #	2010 Date	Actual Water level Staff reading		Notes
old	new			old	new	
			Jan.			
			Feb.			
			Mar. 9	3.08		South Unit - 36" (35" Full Pool)
2.7-3.0						
			Apr. 1	> 3.3		1" of board showing. Opened to Meeps 4th 3pm Pat will close Fri 3/2
			14	> 3.3		1" of board showing. Opened to Woodies west
2.7-3.0						
			May			
			June			
			11			Scale submerged, ≈ 4.5" of board showing
			18	~~3.00~~		At the "2" at the top of the board
			July 2			Can't Read scale, about 6-8" of board showing
			7	2.78		
			20	2.44		
			Aug. 6	2.78	2.78	plate dark and hard to read 2.78 from top showing
			13	5.20	2.20	Dark not positive
			Can't Read			Too Dark
			Sept. 8	2.1?		
			30	1.89		→ Muck in front of blind
~~1.7-1.9~~ 2.40			Oct. 12	2.40		
			25	2.32		
			Nov.			
			Dec. 9	2.69		

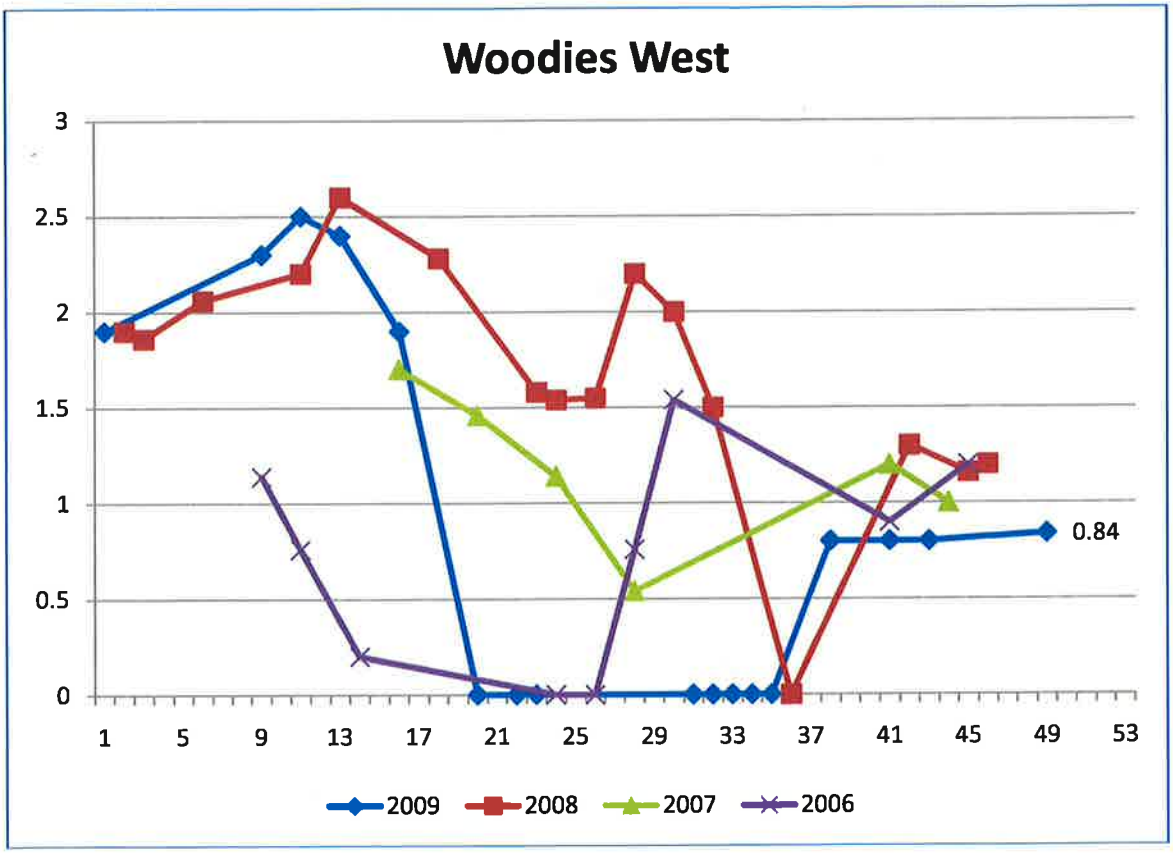
2011- Construction on common dike may require spring d.d. 5

Unit: Woodies Roost West

Acres:

2009 Activity: This unit was drawn down in Mid April and completed by May 30th for construction on the woodies east/west divider dike. The unit was dry by June. The screw gate on the north to the states ditch was replaced b/c the pipe was rotten. Great millet germination. The unit was reflooded in August with the cooperation & assistance of Magee. Construction was not conducted due to RO failure to bid project.

Draw Down Years: 2009 – drawn down mid April, completed by May 30th, flood mid Aug; 2006 – drawn down mid march, completed mid April. Reflooded in Aug.



Unit Goals: Provide foraging habitat and cover for wading birds and waterfowl.

Objectives: Manage for hemi marsh conditions

Strategies: East divider dike and south dike possibly scheduled for repair. Draw unit down depending on construction.

Potential Problems: Beaver and construction

Based on previous years, full pool is 2.6, however the unit does not appear to be able to maintain this high of a level. There is likely a leak somewhere. Staff plate meets bottom of unit at 0.8.

Repairs Needed:

II. North half of divider dike between west and south woodies needs rebuilt & raised.

II. Screw gate between woodies west & south unit with blinds 141 &142.

Unit: **Woodies Roost West** – Based on previous years, full pool is 2.6. Bottom of unit at .8

Desired water level		wk #	2010 Date	Actual Water level Staff reading		Notes
old	new			old	new	
			Jan.			
			Feb.			
		10	Mar. 9	1.24		
2.3-2.6						
			Apr. 1	1.48		
2.3-2.6			14	1.62		opened to Eastside
			May			
			June 4	2.07		
			11	2.14		15th 1.98
			25	2.06		
			July 2	1.60		
			7	1.42		
			20	1.18		
			Aug. 6	1.1		
			23	0.98		
			31	1.4		
			Sept. 8	<0.8		No H2O@ gauge 13 start pumping up from states ditch w/ thompson & states 10" pump
			17	1.5		
			Oct. 12	1.26		
			25	1.28		
~~0.9~~-1.2						
			Nov. 2	1.37		
			Dec. 9	1.69		

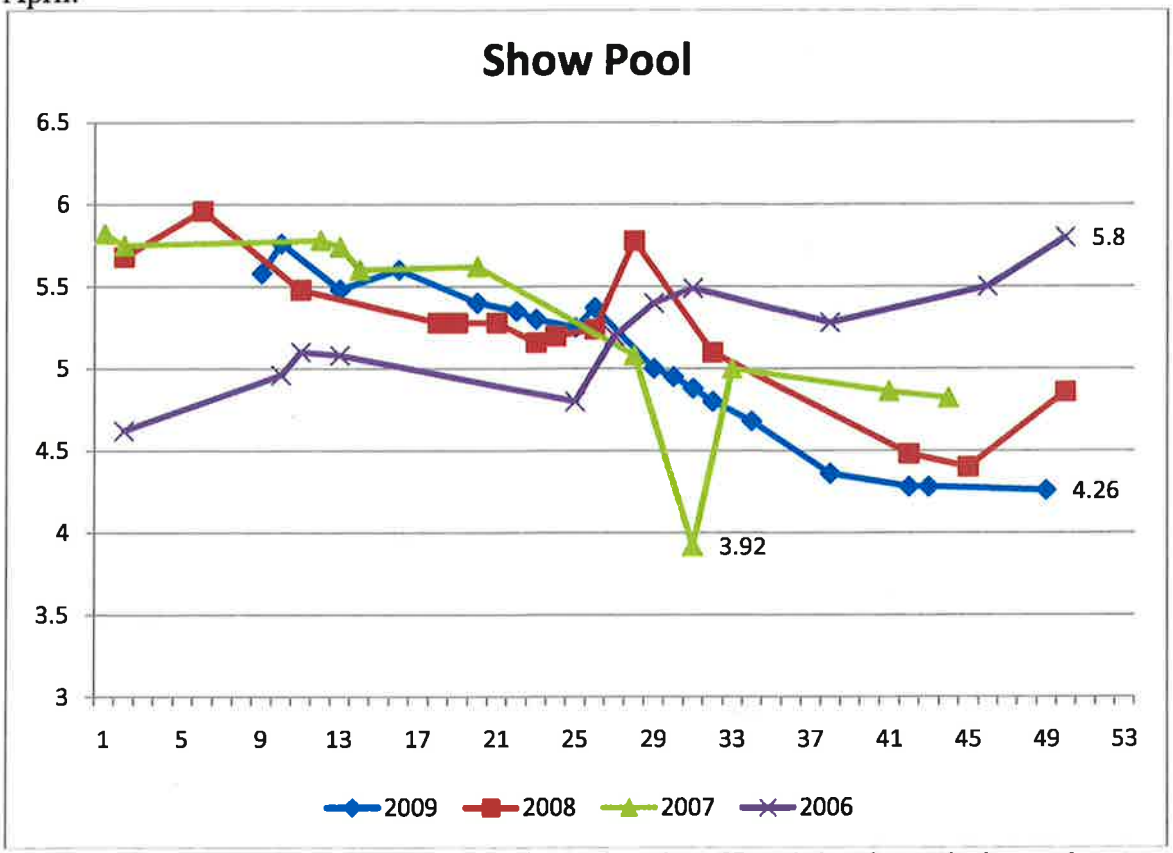
1.8 would like us

Unit: Show Pool

Acres: 41

2009 Activity: Evapotranspiration resulted in water only in the channel and platform area in mid september. This in January of 2007, top board was replaced to maintain lower water levels to prevent high water in woods east of shop and to prevent damage to south and east dikes.

Draw Down Years: 2009-Evapotranspiration resulted in water only existing in borrow areas in midseptember; 2005 – similar conditions as in 2009; 2004- agridrain installed in April.



Unit Goal: Because of the location of this pool to the office, it has been designated as a "show" pool with the intent that it can provide viewing of waterfowl including other wildlife and be a model wetland. This unit will be managed as a permanent wetland with deeper water to over winter fish and provide public catch and release fishing opportunities. Reevaluate in 2010.

Objectives: Increase diversity of emergent marsh vegetation and provide deep water for fish habitat.

Strategies: Monitor dikes, woods behind shop, and water depth on higher ground. Treat invasives.

Management Strategy Constraints: East dike and south dike weakest/lowest of unit. Max water level is 5.48. Ideally, we'd have more water in showpool. The problem is low lake levels and lack of a water source. Future plans may need to think about dredging NS radar ditch or consider ~~other~~ managing for other habitat types (ie – scrub/shrub)

Repairs Needed:

II. East dike shared with goosepen is getting high muskrat damage

III. South dike likely permeable when water is high, consider future management before repairing

Phrag patches need sprayed in unit

Unit: **Show Pool** - Agridrain 15 ¾" wide. Max water level is ~~5.60~~ 5.48

Desired water level		Wk #	2010 Date	Actual Water level Staff reading		Notes
old	new			old	new	
			Jan.			
			Feb.			
			Mar. 9	4.94		
>5.5		13	3/29	5.18		
			Apr.			Shoot water levels btwn goosepen & showpool – look for possible connection
5.48						
			May 13	6.18		14- 6.14
			June			Board raising
			11	6.04		Perhaps switch top board with a bigger board?
			18	5.40		
			July 2	5.58		
			20	5.30		
			Aug. 6	5.36		
			23	5.23		Dark on Bottom
			31	4.9		
			Sept.			
			Oct. 9	4.37		Bouse completely covered
			25	4.26		Water only in borrow
			Nov.			
			Dec. 9	[illegible]		

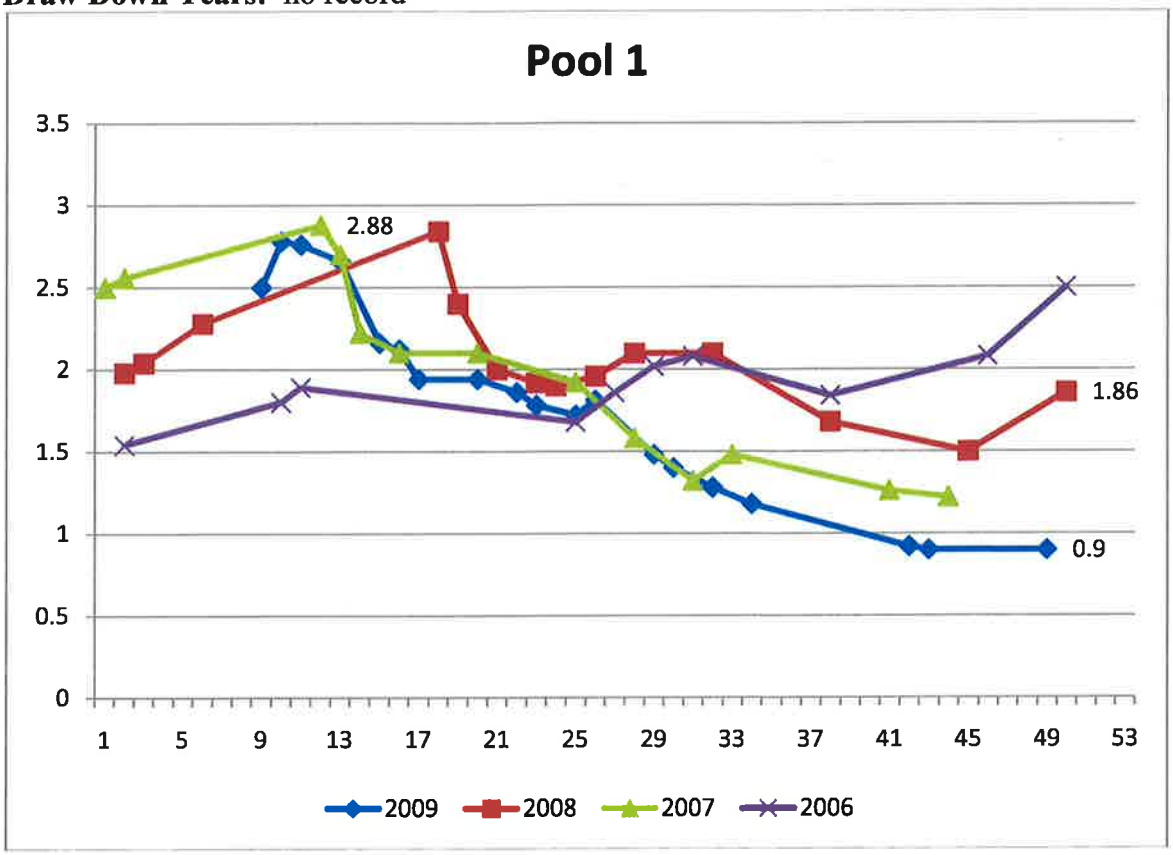
2011 Concern - Check structure to see if its functioning

Unit: Pool 1

Acres: 343

2009 Activity: High water was let out through the NW gate in March through the end of April. The gate came off track and will need fixed. Minimal water was on north point and west side by October.

Draw Down Years: no record



Unit Goal: Provide habitat for nesting common terns, foraging herons, mussel beds, rails, and fish. As well as provide a rest area for waterfowl.

Objectives: The topography of this unit allows for a variety of water level depths. To provide habitat for nesting common terns, fish and mussels, maintain deep (3-4ft) open water areas. Provide emergent and submergent wetlands for wading birds, waterfowl and invertebrates. The higher elevation areas along the south and north parts of the unit will provide flooded grass and sedge areas for rails.

Strategies: Ensure unit is at optimum pool in the spring and allow evapotranspiration to decrease water levels no lower than 1.0 by September.

Management Strategy Constraints: Screw gate on west side not able to close – it keeps coming off of frame. Gate to lake is closed.

Repairs Needed:

II. Water control structure on west side - screw gate comes off braces when closed. Currently open, but creek gate closed.

Unit: **Pool 1** – Management may change based on Crane Creek structure

Desired water level		wk #	2010 Date	Actual Water level Staff reading		Notes
old	new			old	new	
			Jan.			
			Feb.			
			Mar. 9	1.34		
2.3-2.4						
			31	1.53		
			Apr.			
			May			
2.0			June 4	1.74		
			11	1.86		
			18	1.78		
			July 2	1.68		hard to see b/c of vegetation
			Aug. 10	1.32		
			23	1.21		
			31	1.4		
			Sept. 14	0.86		
			30	0.84?		
			Oct. 9	.92		
1.1-1.2			20	.90		
			25	.86		Water only in open areas
			28	0.84		
			Nov. 9	0.82		
			Dec. 9	1.0		

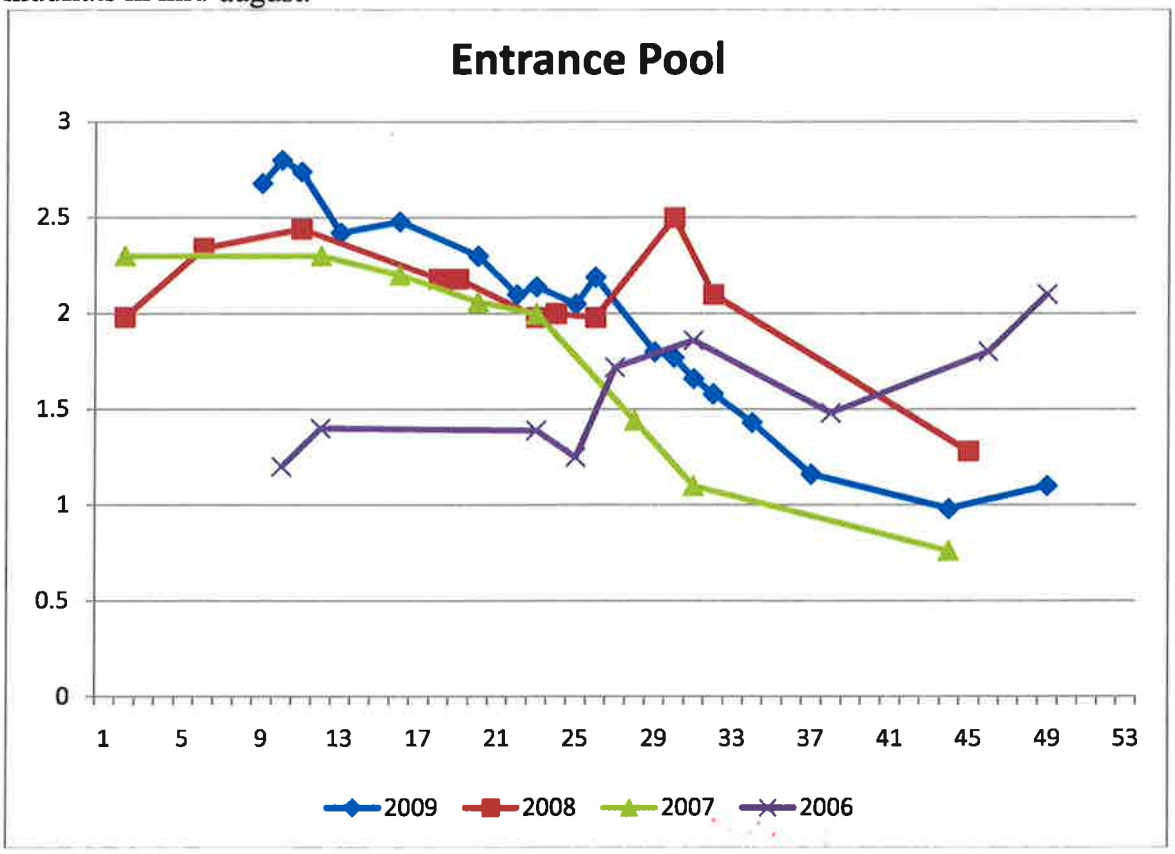
2011- Add water in Spring possibly from Pat or set a pump up in pump structure.

Unit: Entrance Pool

Acres: 150

2009 Activity: A 4 inch board was pulled in March to let high water out. Unit flowed over boards through April. Lots of burreed production in mid-June.

Draw Down Years: 2009 - evapotranspiration resulted in a draw down with water only remaining in channel along Entrance Rd; 2007 - evapotranspiration resulted in a draw down with water only remaining in channel along Entrance Rd; 2005 – Construction (new stoplog structure) and evapotranspiration resulted in a complete draw down with mudflats in mid-august.



Note: 1.0 = water only in channel.

Unit Goal: Provide a diversity of marsh type habitats, ranging from cattail stands to open water. Attract a variety of waterfowl, shorebirds, water birds, and wetland animals to provide opportunities for wildlife viewing. Control exotic invasive species.

Objectives: Provide shallow to deep emergent marsh. Maintain higher water levels to combat purple loosestrife.

Strategies: Draw down for May shorebird habitat, reflood for fall migration.

Management Strategy Constraints: Water can only be added by using a portable pump.

Repairs Needed:

Unit: **Entrance Pool** IGLD correction 571.99

Desired water level		Wk #	2010 Date	Actual Water level Staff reading		Notes
old	new			old	new	
			Jan.			
			Feb.			
			Mar. 9	1.74		Pulled top board to protect P.L. bugs (1.6-1.70) keeper
~~3.0~~ 4.7						
		13	3/29	1.74		
			Apr.			Draw down for May mudflats
			14	1.68		Pulled 1-4" board 9am 26-pulled 12" board
			28	0.9?		Dirty-clogged boards
1.0?			May 6	.98?	72.94	lifted board in AM (10:30)
			12		72.74	17 - 72.?
			26		72.76	
			June 1		72.62?	Pulled board
			4		72.38	
			11		72.89	
			18		72.68	
			July 2		72.36	
			Aug. 6		71.80	
			23		71.45	
			Sept.			Reflood
			Oct. 9		—	No water, could reflood
1.28			20		72.48	
			25	.06	72.60	
			Nov. 9			Flooding w/ Thompson.
			Dec. 9	73.07		

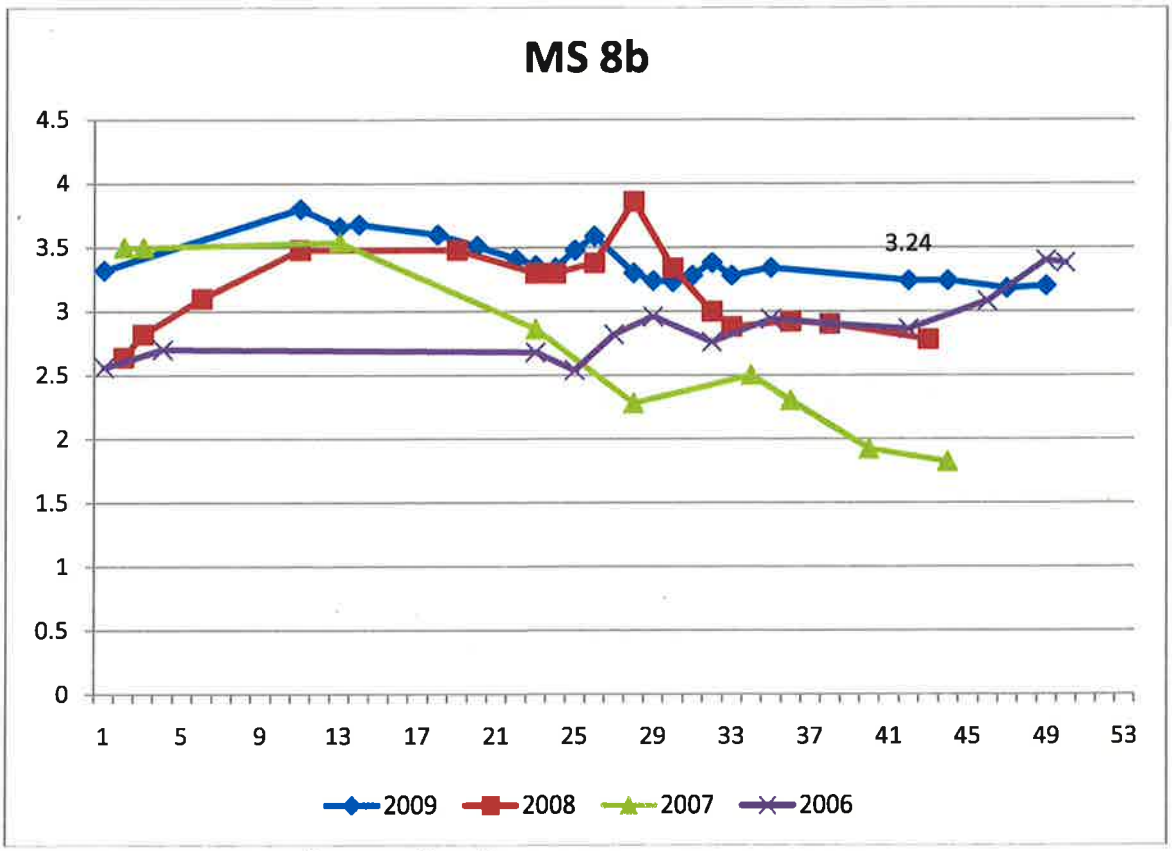
2011- Check boards!

Unit: MSU 8B

Acres: 100

2009 Activity: In March the gate in the SE corner was opened to let excess water out. In early June and August the pump was ran in an attempt to maintain higher water levels

Draw Down Years: 2005 - drawn down briefly in June for construction and reflooding began by end of month; 2004 – drawn down March and reflooded in late August; 2003?



Unit Goal: Provide resting and foraging habitat for migratory birds.

Objectives: Manage against invasives and allow for more open areas in the marsh.

Strategies: Maintain high water levels in the unit throughout the growing season. This will likely require periodic pumping and active management.

Management Strategy Constraints: Water levels may need to be manipulated to install a pump structure from the Visitor Center ditches into 8b as well as add an agridrain to the south east corner of the unit. Full pool 3.40-3.46 – May need to pump to maintain high water.

Repairs Needed:

Unit: **MS 8b** - Full pool 3.40-3.46 – Readings can be taken from the SE structure measuring from water's surface to top of brace. Tape measure reading of 21 ½" = 3.48

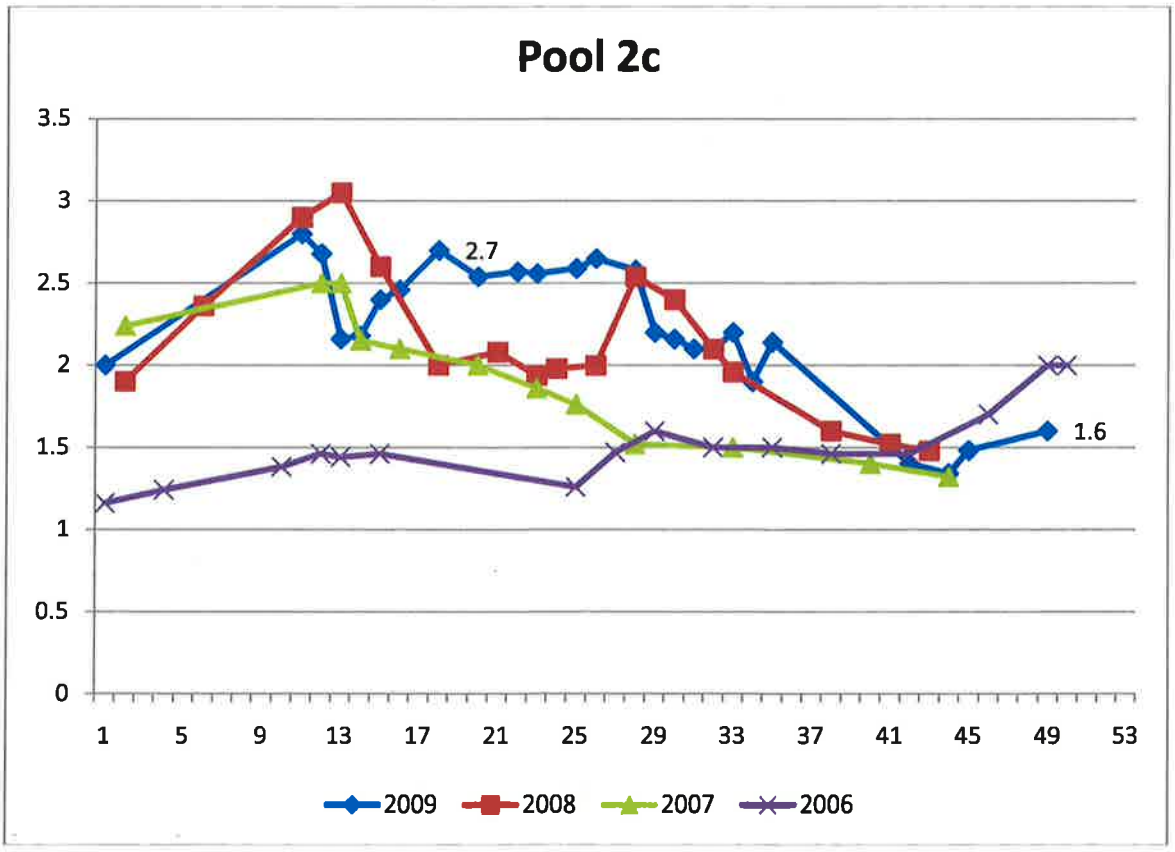
Desired water level		Wk #	2010 Date	Actual Water level Staff reading		Notes
old	new			old	new	
			Jan.			
			Feb.			
			Mar.			
3.4/21.5"		13	3/29	3.46		
			Apr.			
		15	12	3.48		
			May 17	3.52	73.92	
			June			
3.4			11	3.57	73.98	
			15	3.54	73.94	18th - 3.48 73.88
			July 2	3.32	73.71	
			9	3.05	73.64	
			20		73.46	
3.4			Aug 2	3.18	73.58	
			6	3.12	73.52	
			17	3.0	73.40	Pump turned on 12pm - OFF 20th
			23	3.11	73.49	8/31 - 3.19 / 73.58 pump on - 8/23 thru 8/27 ?
			Sept 3	3.10	73.50	Pump on (~~screw~~ Round gate to ~~ditch~~ in pump structure open 2") closed!
			13	3.27	73.68	17 - 73.8 (3.4)
3.4						
			Oct.	3.32	73.72	
3.4						
			Nov. 10	3.20	73.62	
			Dec. 9	3.46	73.81	

Unit: Pool 2C

Acres: 82

2009 Activity: This unit was opened to Crane Creek in mid-March and remained open until trapping season started on the refuge in early November. Water levels fluctuated with estuary. Spring and summer water levels appeared too deep for most water birds. Heron and egret use was restricted to muskrat huts.

Draw Down Years: 2005 – Pumped down mid-March through end of May with 60% mudflats achieved, remainder 6 in or less. Unable to pump down further. Evapotranspiration led to most of unit drawn down by July. Unit gained water in August and reached May levels again. Unit was reflooded in September. High levels of P.L establishment.



Unit Goals: Attract a variety of waterfowl, shorebirds, water birds, and wetland animals to provide opportunities for wildlife viewing. To enhance water level management capabilities, a project to ditch MS 8A and install individual stop log structures to Pool 2A, 2B, and 2C is proposed.

Objectives: Manage for hemimarsh conditions.

Strategies: Leave open to lake ditch to allow water exchange. Ideally, maintain higher water levels in the spring to stress surviving loosestrife plants (approximately 2.0). Allow for evapotranspiration.

Management Strategy Constraints: Water can only be added with a portable pump or high lake levels. High lake levels can also inhibit taking water off the unit and free flowing into the lake.

Repairs Needed:

Correction 569.99

Unit: **Pool 2c** – 2.0 on the gauge = 2 - 2 ½ feet of water acrosss most of unit.

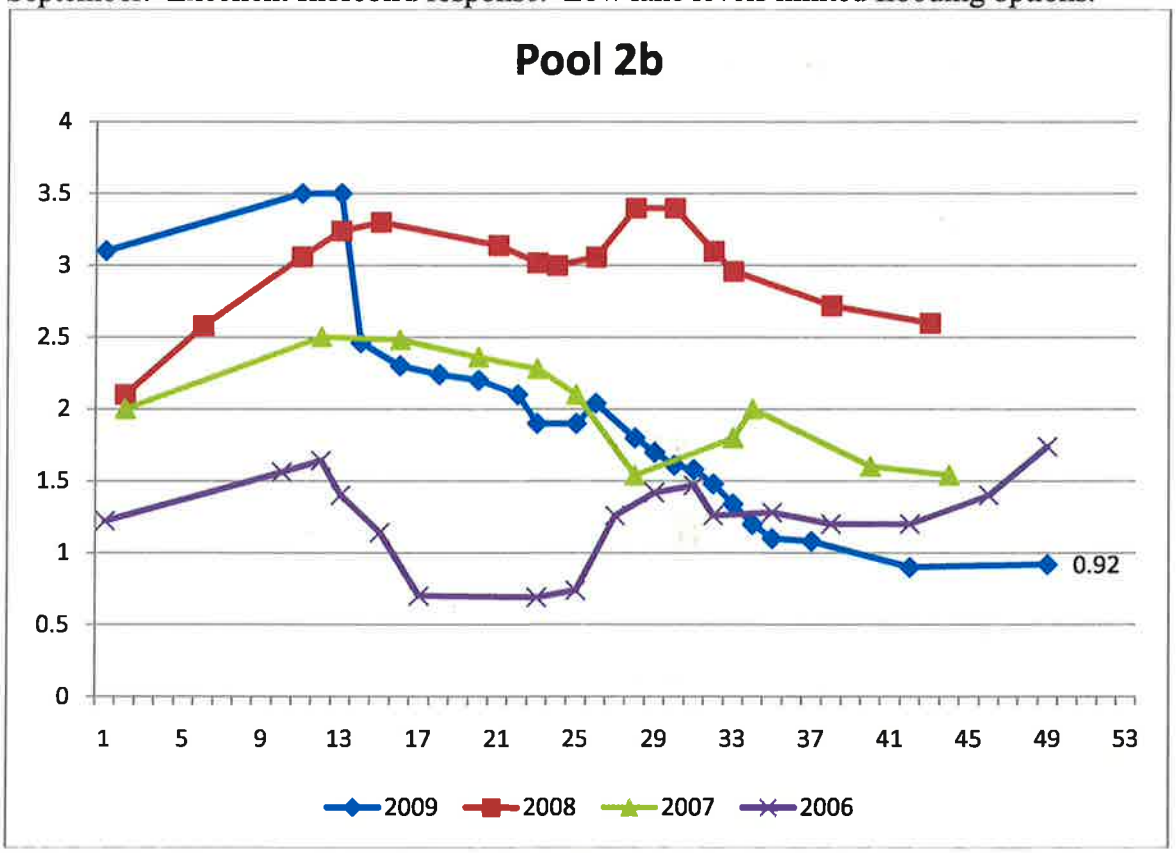
Desired water level		Wk #	2010 Date	Actual Water level Staff reading		Notes
old	new			old	new	
			Jan.			
			Feb.			
			Mar. 17	2.66		Opened
						Leave open until minimum thresthold of 1.7 is reached
2.0						
		13	3/29	1.58		
		15	Apr. 12	1.44		
			May 17	2.04	72.0	
>1.7			June 4	2.06	72.02	
			11	2.26	72.23	
			15	2.32	72.34	18 - 72.20, 2.22
			July 2		~~72.12~~	scumy scale 72.1?
			Aug. 2		72.02	
			16		71.9 - 71.7	scummy
			23			
			31		71.4	Muddy
			Sept.			
			17	1.2?	below	muddy
			Oct. 12	1.29	below	
~~1.5~~ 1.4			28	0.82		Strong SW winds for past 3 days.
			Nov. 10	0.9		Closed flap to ditch to keep H_2O in
			Dec. 9	1.34	71.36	

Unit: Pool 2B

Acres: 95

2009 Activity: High water was let out in March through the Pool 1 structure. High lake levels made this unsuccessful, portable pump was set up in nw corner of unit and ran periodically through April. Purple loosestrife expanded in sw corner and up west dike. Not spraying was conducted. A fall draw down was started in mid August with the portable pump. Pumping was completed by early September, and evapotranspiration was allowed to continue drawdown. Rain in October prevented a complete draw down. Unit received fair shorebird and teal use, and good egret/heron and dabbler use in fall.

Draw Down Years: 2009- mid August draw down for fall shorebird migration, fair results achieved; 2006 – Unit was pumped down in mid-March and managed for mudflats & spring shorebird habitat through June. Unit was reflooded in July; 2005 – Pumped down early August for fall shorebird migration. 90% mudlflats achieved by early September. Excellent shorebird response. Low lake levels limited flooding options.



Unit Goals: Attract a variety of waterfowl, shorebirds, water birds, and wetland animals to provide opportunities for wildlife viewing.

Objectives: Perennial smartweed is the dominant emergent vegetation in the unit, try to encourage more variety of vegetation. Provide areas of deep submergent wetlands for fish and invertebrates, as well as shallow emergent wetlands for wading birds and waterfowl.

Strategies: Install new water control structure in spring/summer to open this unit to fish passage and water exchange with estuary (USGS project). Draw down for April shorebirds.

Management Strategy Constraints: Currently there is no independent water control for this unit, unless a portable pump is used. This can be costly and needs frequent monitoring/maintenance. Refuge budget and project priority will determine water management activities.

Unit: **Pool 2b**

Desired water level		Wk #	2010 Date	Actual Water level Staff reading		Notes
old	new			old	new	
			Jan.			
			Feb.			
			Mar. 15	1.54		Begin pumping down. 3/16 - 1.30
		11	17	1.1		Mud Flats on south side. turn pump off
						Draw down once temperatures allow
0.9		13	Apr. 2	1.32		
			27	1.40		
0.3			May			
			17	1.54		
0		21				
			June 4	1.47		
			11	1.60		
			15	1.56		18th - 1.58
			July 2	1.32		
			9	1.29		
			Aug. 6	1.22		
			23	1.08		
			31	.9		
		35	Sept.			Reflood
			17	0.8 barely		
			Oct. 12	0.74		
1.0-1.5			28	0.58		
			Nov.			
			30			Pumping H2O out of borrow for construction
			Dec. 1	0.6-0.7?		Done pumping.

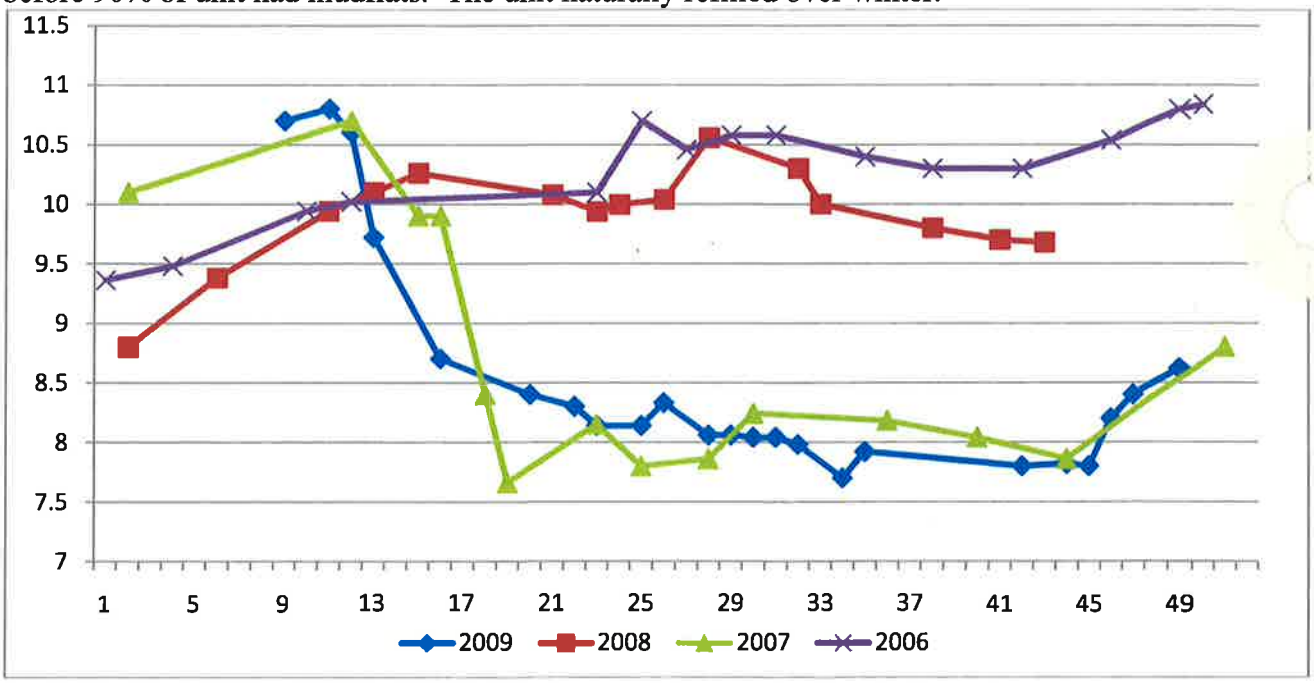
Read the right gauge.

Unit: Pool 2A

Acres: 65

2009 Activity: This unit was drawn down with portable pump for spring shorebird migration. Mudflats were exposed in the NE corner, island, and areas along the west side by April 1st. Periodic pumping and evapotranspiration allowed for water to continuously expose new mudflats through July. Excellent spring shorebird use. In mid August, a little water was put back on the unit via 2a to rewet mudflat areas. Good early fall shorebird use. In November, more water was added for fall dabbler use. Good dabbler and Goose use was observed. Flooding ceased due to refuge hunts and iceup in early December. Draw down allowed Phrag to expand around island and P.L in SE corner and around island. Spraying was conducted on P.L. and some Phrag. Not all Phrag was treated.

Draw Down Years: 2009 – April through August managed for mudflats & shorebird use, reflooded in November – excellent shorebird use and good response of nutsedge & nodding smartweed around island; 2007 – Pumped down by May and reflooded in July. Missed April shorebird migration, but excellent knodding smartweed, sedge, & millet response and fall duck use. 2004 – drawn down started late March, but it was August before 90% of unit had mudflats. The unit naturally refilled over winter.



Unit Goals: Attract a variety of waterfowl, water birds, wetland animals and invertebrates to provide opportunities for wildlife viewing.

Objectives: Establish more perennial vegetation. Manage against invasives.

Strategies: Maintain water levels shallow enough in spring to allow previous years perennials to regrow, but deep enough to minimize moist soils & invasive germination.

Management Strategy Constraints: It is difficult to remove high water. 8a must be drawn down at the same time, or a portable pump set up. Water must be added via 8a, or with a portable pump as well. Portable pumps take staff time to maintain and may conflict with other project priorities.

Repairs Needed:

III. To enhance water level management capabilities, a project to ditch MS 8A and install individual stop log structures to Pool 2A, 2B, and 2C is proposed.

Unit: **Pool 2a** - Majority of mudflats exposed at 7.66

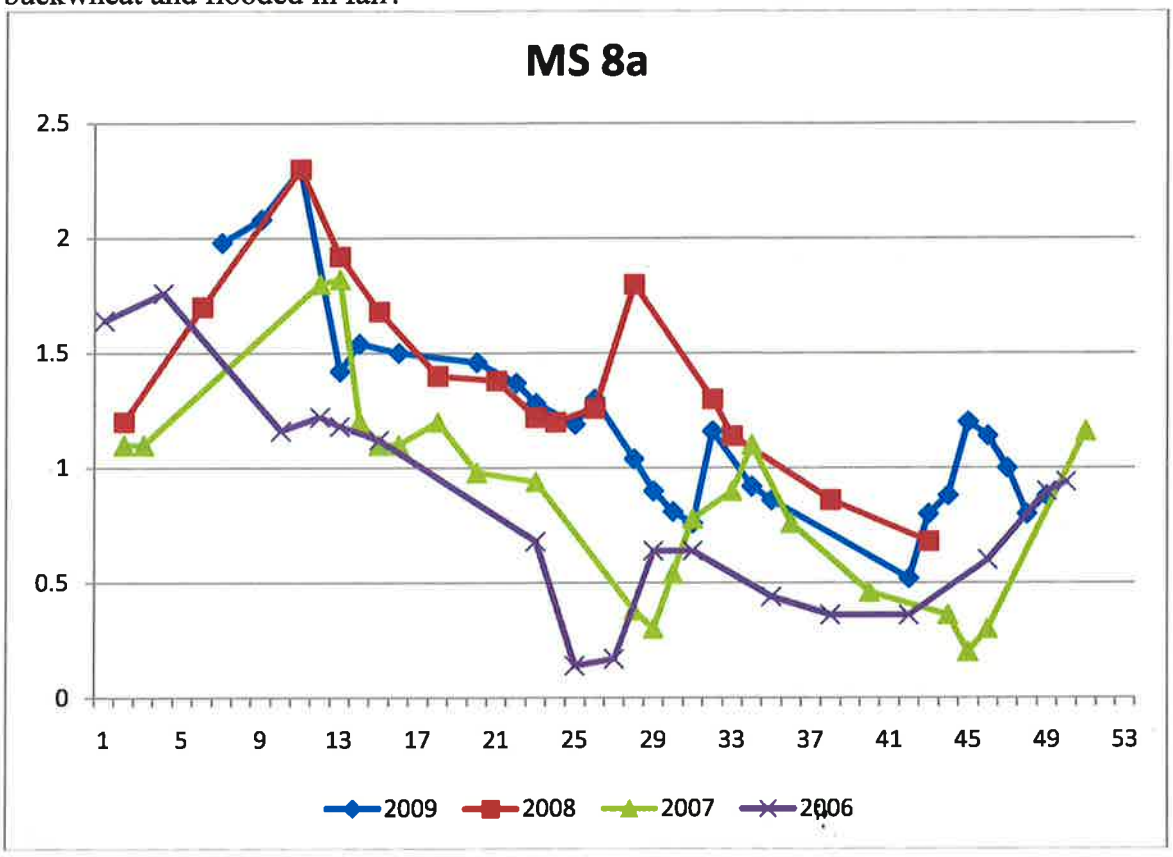
Desired water level		Wk #	2010 Date	Actual Water level Staff reading		Notes
old	new			old	new	
			Jan.			
			Feb.			
		10	Mar. 9	9.06		
9.5-9.7		11	17	9.10		
		13	3/29	9.20		
			Apr.			Field check water level depths
9.2			May 17	9.48		
			June			Spray P.L.
			11	9.26		
			18	9.50		
			July 2	9.32		
			9	9.32		
			Aug. 2	9.24		Spray Phrag
			10	9.20		
			23	9.08		
			31	8.9		
			Sept.			
~~8.7~~			Oct. 12	8.72		
			28	8.66		
9.0-9.2						
			Nov. 10	8.79		Opened 4" from 8A - Adding H2O
			12	9.0		11/13 - 9.08 Pump OFF - 11/14 15 - 9.27 Closed gate
			15	9.27		
			Dec. 9	9.47		

Unit: MSU 8A

Acres: 56

2009 Activity: High water was let out in March and April. East side had shallow water/mudflats in August. The pump was turned on briefly. In November the pump was ran to put water into 2A.

Draw Down Years: 2009 – evapotranspiration resulted in mudflats on east side in August. Periodic pumping and mudflats occurred through mid October; 2004 – drawn down in March. Parts of unit disked. Reflooded in mid-September; 2003 – planted buckwheat and flooded in fall?



Unit Goal: Provide resting and foraging habitat for migratory birds.

Objectives: Encourage marsh vegetation and invertebrates.

Strategies:

Management Strategy Constraints:

Repairs Needed:

II. Catwalk needs raised 12"

Unit: **MS 8a**

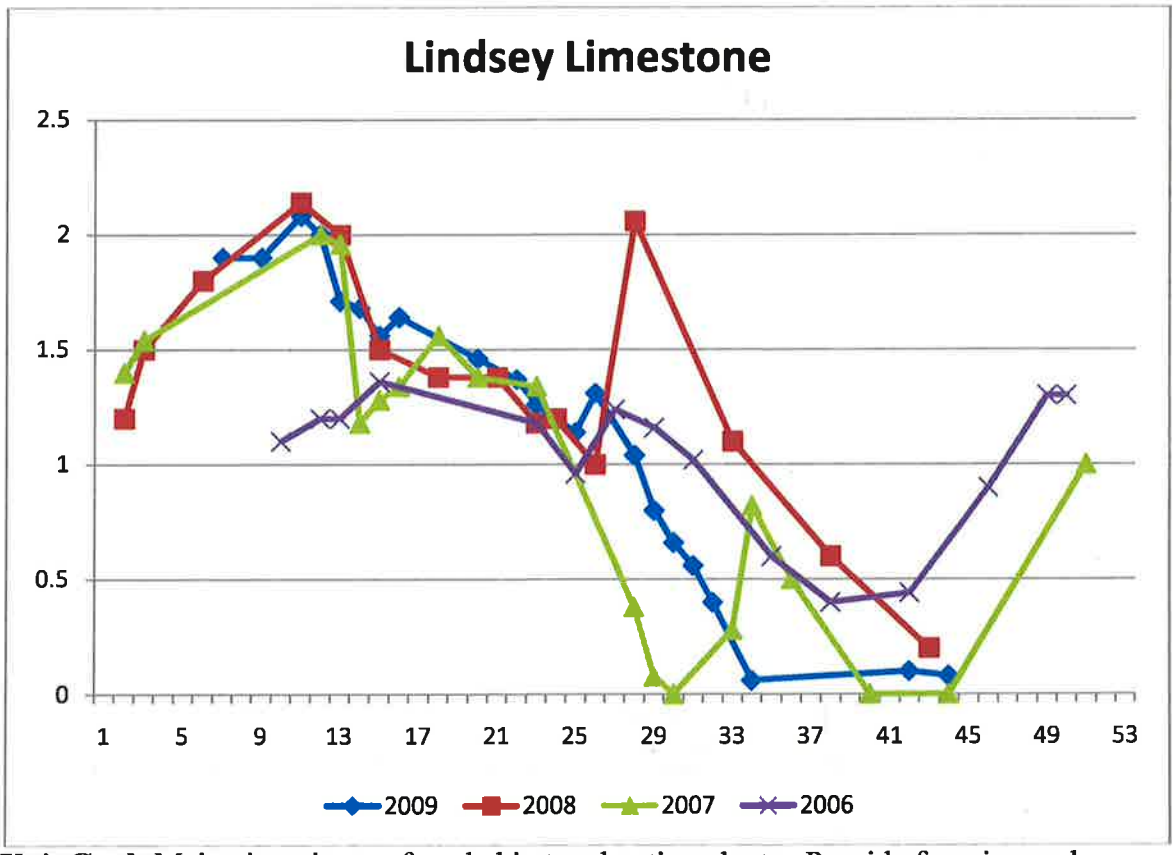
Desired water level		WK #	2010 Date	Actual Water level Staff reading		Notes
old	new			old	new	
			Jan.			
			Feb.			
		10	Mar. 9	1.48	72.70	
		11	17		72.78	
		13	29	1.6?	72.82	windy
		15	Apr. 12	1.7	72.90	
1.7						
			May 17	1.92	73.12	
1.5			June			
			4	2.02	73.23	
			18	1.94	73.14	
			July 2		72.94	
			9		72.89	
			Aug. ~~1~~		~~73.58~~	Draw down for shorebirds
			2		72.76	Opened Gate 6 inches for DD -72.36 8/3
			4		72.1	5-71.78 Closed 300 GREG (with a few snowy & GBH)
			10		71.74	17-74.70
		Aug	~~23~~		71.60	8 (S.I - 71.45
			Sep 8		71.3?	1" below plate
0.8-1.0			Oct. 12	0.16	71.34	at bottom of gauge (new)
			28	0.0		below bottom of gauge
			Nov. 9			Replaced motor on pump. turned on to fill 8A.
			10			Pumping 14-pump off
			11	.28	71.60	13-71.50 15-0.08 16-71.5 Pump on
			~~Dec.~~ 11/17		71.68	Pump off (low lake) 11/22 71.76-pump on
			11/29	.80	[redacted]	Pump ON
			11/30	1.0	72.20	
			12/9	.9	72.19	

Unit: MSU LL

Acres: 27

2009 Activity: High water was attempted to be let out in the spring, however pipe to C.C. didn't function. Evapotranspiration resulted in a draw down to minimal water remaining in borrow area. In November, pump was used to dewater borrow to expose pipe. Pipe was damaged at end and needs to be cut off. Hopefully end of pipe was silted in and once cleaned out, will funcion properly.

Draw Down Years: 2009 – evapotranspiration resulted in late summer draw down (late July and August)



Unit Goal: Maintain unique refuge habitat and native plants. Provide foraging and nesting habitat for migratory birds.

Objectives: Maintain marsh conditions.

Strategies: Allow full pool in spring and evapotranspiration throughout the season.

Management Strategy Constraints: Unit floods easily from rains, resulting in dramatic water level changes. Approximately 1.3 unit floods north woods. Possibly broken outlet pipe to 8a pump box.

Repairs Needed:

I. Pipe to WCS is broken. Needs cut off & flushed out to allow for drainage.

Correction 571.49

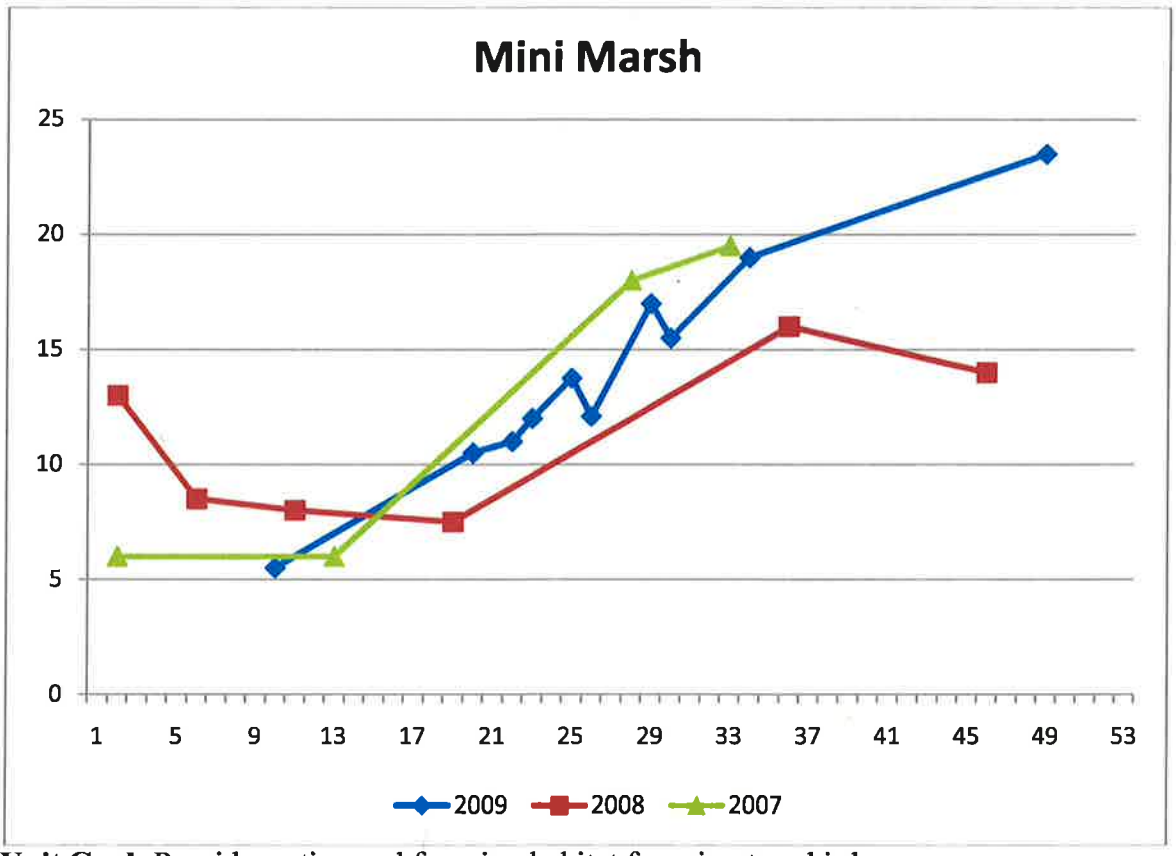
Unit: **MS LL** - Possibly, 1.30 is full pool. Higher water backs up into north woods.

Desired water level		Wk #	2010 Date	Actual Water level Staff reading		Notes
old	new			old	new	
			Jan.			
			Feb.			
		10	Mar. 9	1.0		
		11	17	1.1		
1.3						
		13	3/29	1.24		
		15	Apr. 12	1.44		
1.3						
			May 17	1.64		
1.3						
			June			
			11	1.74		
			18	1.64		
			July 2	<1.5		scumy+hard to read but <1.5
			9	1.4		
			Aug. 2	1.2		
			10	1.2		
			23	2.87		
			31	.68		
			Sept.			
			Oct. 12	0.00		below plate 1/2"
			Nov.			
			Dec. 9	.6		

Unit: Mini Marsh

Acres: 30

2009 Activity: Minimarsh is used as a holding tank to pump up blind 93 in the fall. During this time water levels fluctuate highly until pumping is finished.



Unit Goal: Provide resting and foraging habitat for migratory birds.

Objectives: Maintain as hemi marsh.

Strategies: Possibly conduct spring burn.

Management Strategy Constraints: If water in unit gets much higher than half way up the side of the discharge pipe, water leaks through splitter box to Crane Creek. Needs new flap gate.

Repairs Needed:

III. Raise south dike – borrow from ditch and inside unit. This would allow for deeper water management capabilities and more diversity.

Soil Concerns Box is falling apart.

Unit: **Mini Marsh** - Measure from waters surface to top of splitter box.

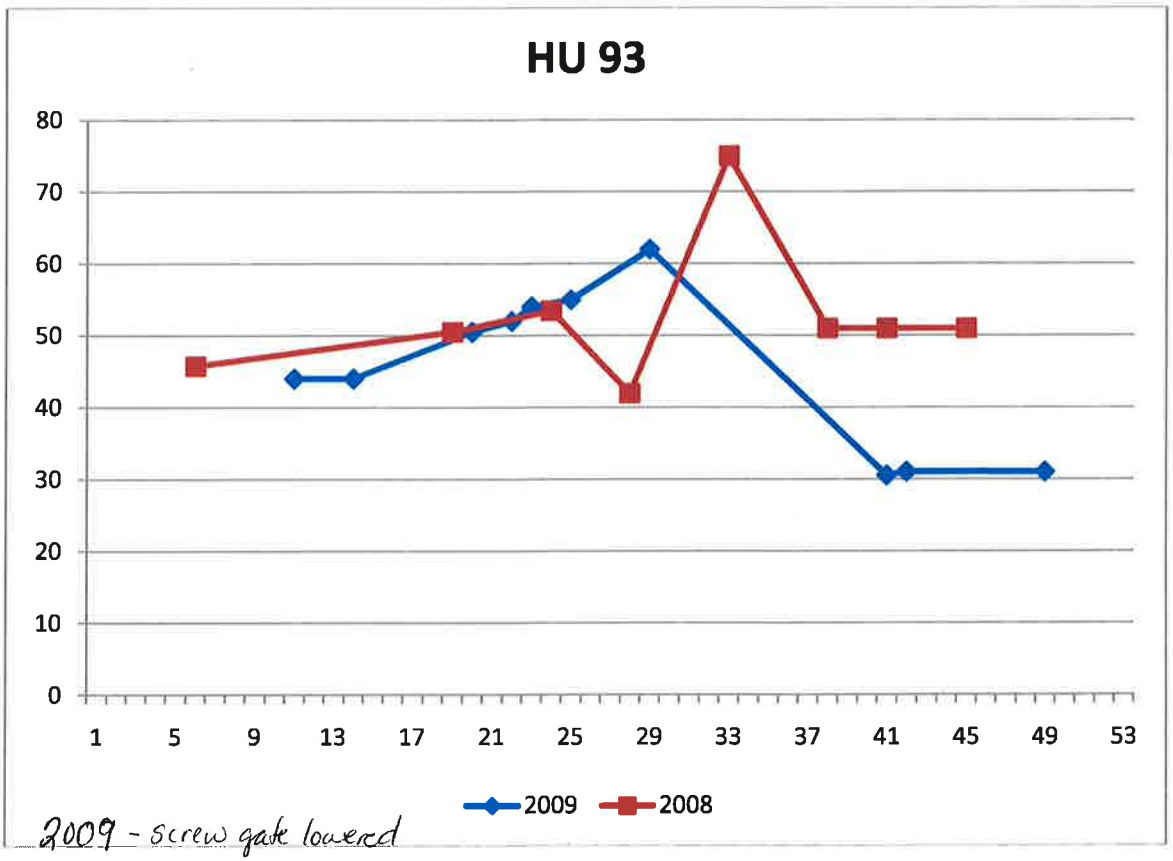
Desired water level		Wk #	2010 Date	Actual Water level Staff reading		Notes
old	new			old	new	
			Jan.			
			Feb.			
			Mar. 10	18"		
8"						
		13	29	17"		
			Apr.			
8"						
			May			
			June			
			July			
			Aug.			
			Sept. 6			Pump on
			10			OFF For Weekend
			13			Pump on - 14 - OFF, Flooding 93
			Oct. 28			Dry
			Nov. 3	14 1/2		
10"			16	13		Pump on in AM, OFF in PM
			Dec. 9	10 1/2		

Unit: Hunt Unit 93

Acres:

2009 Activity: Evapotranspiration resulted in mudflats in mid-July. Phrag was broadcast sprayed and appeared to die. P.L. was sprayed, but incorrect spray concentration resulted in poor kill rate. Unit was reflooded in mid-September. Screw gate was replaced and lowered.

Draw Down Years:



Unit Goal: Provide resting and foraging habitat for migratory birds and provide a quality hunt unit.

Objectives: allow unit to establish good annual plant production.

Strategies: Will need to monitor for invasives, and possibly take more aggressive measures in management.

Management Strategy Constraints: This unit sits on high ground and flooding is costly & difficult.

Repairs Needed:

III. If this unit is maintained as a wetland, then the west and south dikes are in questionable shape & may degrade quickly with water against them year round. Consider rebuilding for better compaction, tile search, & higher dike tops.

Unit: **HU 93** - From waters surface to middle brace on screw gate. 32" is full pool

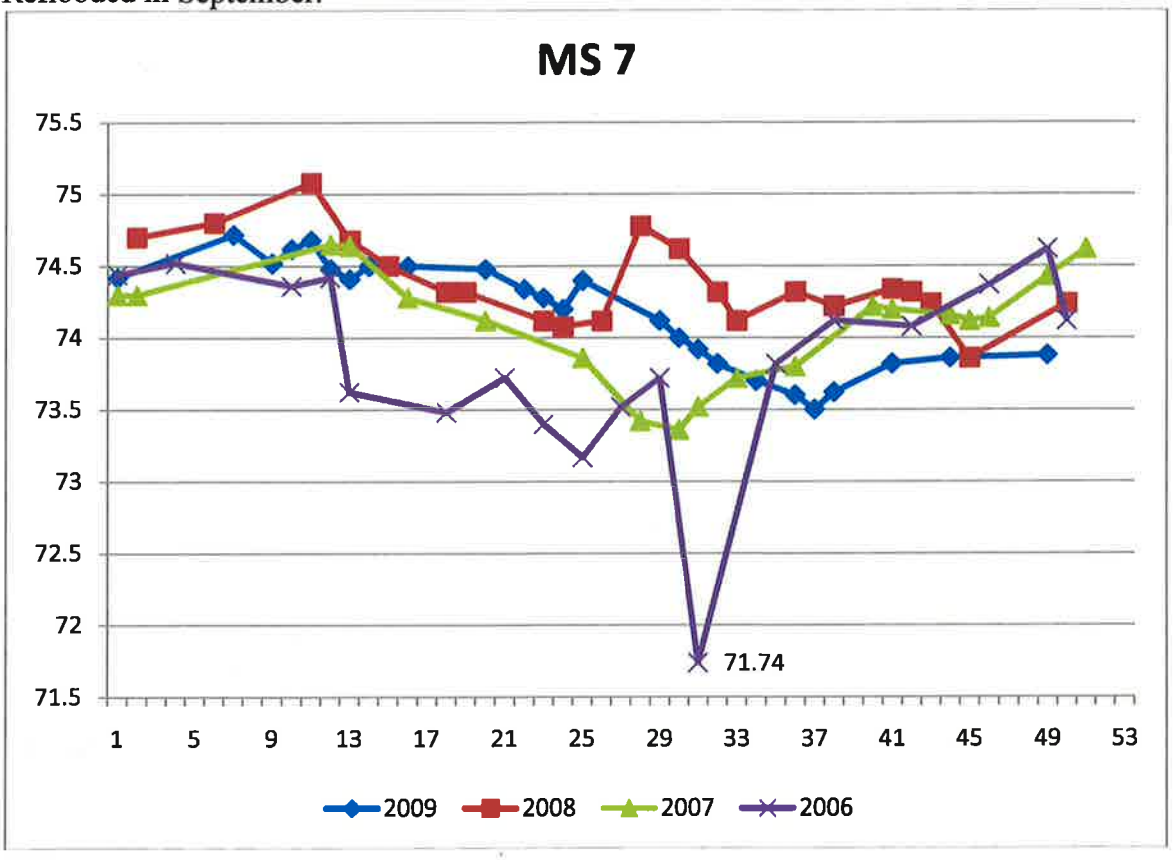
Desired water level		Wk #	2010 Date	Actual Water level Staff reading		Notes
old	new			old	new	
			Jan.			
			Feb.			
		10	Mar. 9	27¼"		Too high. Pulled 1 board
31"			17	30"		
			Apr.			
			May			
			June			
			11	30.25"		I think w. dobb
			18	31.5		
			July 2	35"		?
			Aug.			
			Sept 8			
			21			Flooding w/ Thompson
			24			
			Oct. 12			32" @ screw gate (measure on south side from H20 to top brace)
			20	32.5"		
31"						
31"			Nov.			
			Dec. 9	31"		

Unit: MSU 7

Acres: 94

2009 Activity: High water was let off in mid-March. Water was added in early June and again in September.

Draw Down Years: 2007 – previous fall draw down resulted in excellent spring bird use. Evapotranspiration led to saturated soils in June. Unit was flooded in late mid September when pump was replaced; 2006 – A draw down was attempted starting in May, but not achieved until mid July. Invasives were mowed and disked in early august. Unit was reflooded in mid August and managed for mudlflats. Unit was reflooded in September; 2005 – Drawn down in June for construction. Unit dry except ditch by July. Reflooded in September.



Unit Goal: Provide migratory bird foraging and resting habitat. In addition the transitional areas on 7B will allow for easily accessible upland habitat for nesting as well as provide a gradient of water levels.

Objectives: Manage water levels against invasives.

Strategies: Maintain full pool by pumping throughout year as needed and treat invasives.

Management Strategy Constraints:

Repairs Needed:

II. Krause Rd is too low in the SW corner and needs to be raised to allow to manage against invasives with deeper water levels.

Unit: **MS 7**– 3.14 on old gauge = 73.96 on new staff plate

Desired water level		Wk #	2010 Date	Actual Water level Staff reading		Notes
old	new			old	new	
			Jan.			
			Feb.			
			Mar. 8	3.52	74.30	
3.5	74.32					
			29		74.40	
		15	Apr. 12		74.44	
3.5	74.32					
			May 12		74.50	
			June			
			11		74.44	
			15		74.40	19 - 74.50
			July 2		74.10	
			26		74.02	
			Aug. 2		73.90	
			6		73.86	
			23		73.70	
			31		73.57	
			Sept. 8		73.40	Pump on
			13		73.71	14- Pump quit working
			17		73.80	Turn pumps on after Sept elect. reading to get better re
			20		73.78	
			23		73.66	
			Oct. 9		73.94	
3.0	73.82				73.90	
			20		73.86	25 - Pumping up will Thompson 27 - Stepped pump
			28		73.96	
			Nov.			
			Dec. 9		74.1	

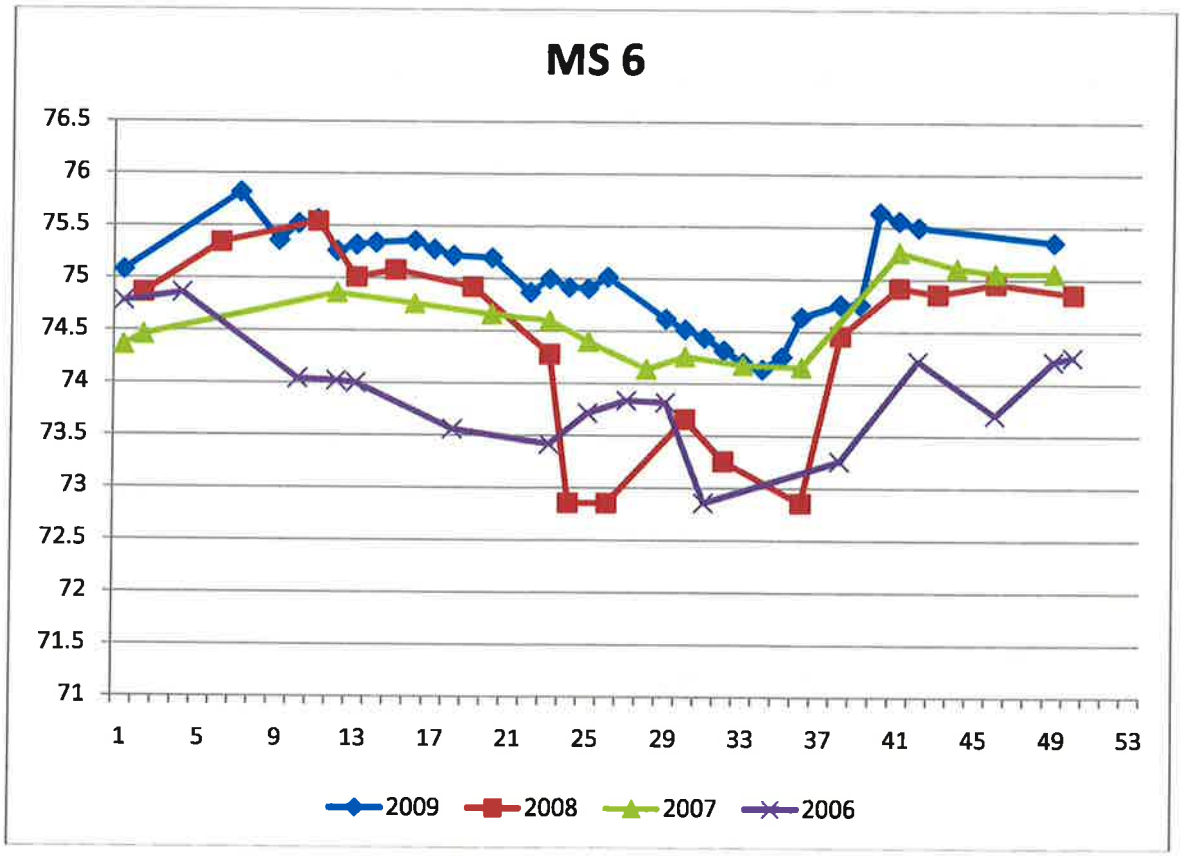
Pump @ repair shop. Pat. Beaver Activity

Unit: MSU 6

Acres: 70

2009 Activity: High water was taken off in March and April. HU6 remained open to MS6 through July. In September, MS6 was flooded to flood HU 6. A new staff plate was installed and reflect true elevations. 2.54 = 575.40.

Draw Down Years: 2008 – Drawn down for construction in early June. Reflooded in late July and again in September. 2006 – MS pump structure gate for MS6 leaked water out in early spring. Unit was then managed for mudflats and reflooded in Sept.; 2005 – Evapotranspiration led to mudflats in July. A hole in the north dike was repaired. The unit was reflooded in September.



Unit Goal: Provide foraging and resting habitat for migratory birds as well as brood habitat.

Objectives: Manage for hemimarsh conditions.

Strategies: Maintain full pool

Management Strategy Constraints: see repairs needed

Repairs Needed:

II. Screw gate in MS pump leaks. All gates in drop box need to be closed to maintain water in unit.

II. ditch along County Line Rd is not functioning at outlet in CC ditch that feeds the MS pump. Pipe may be collapsed, or silted in.

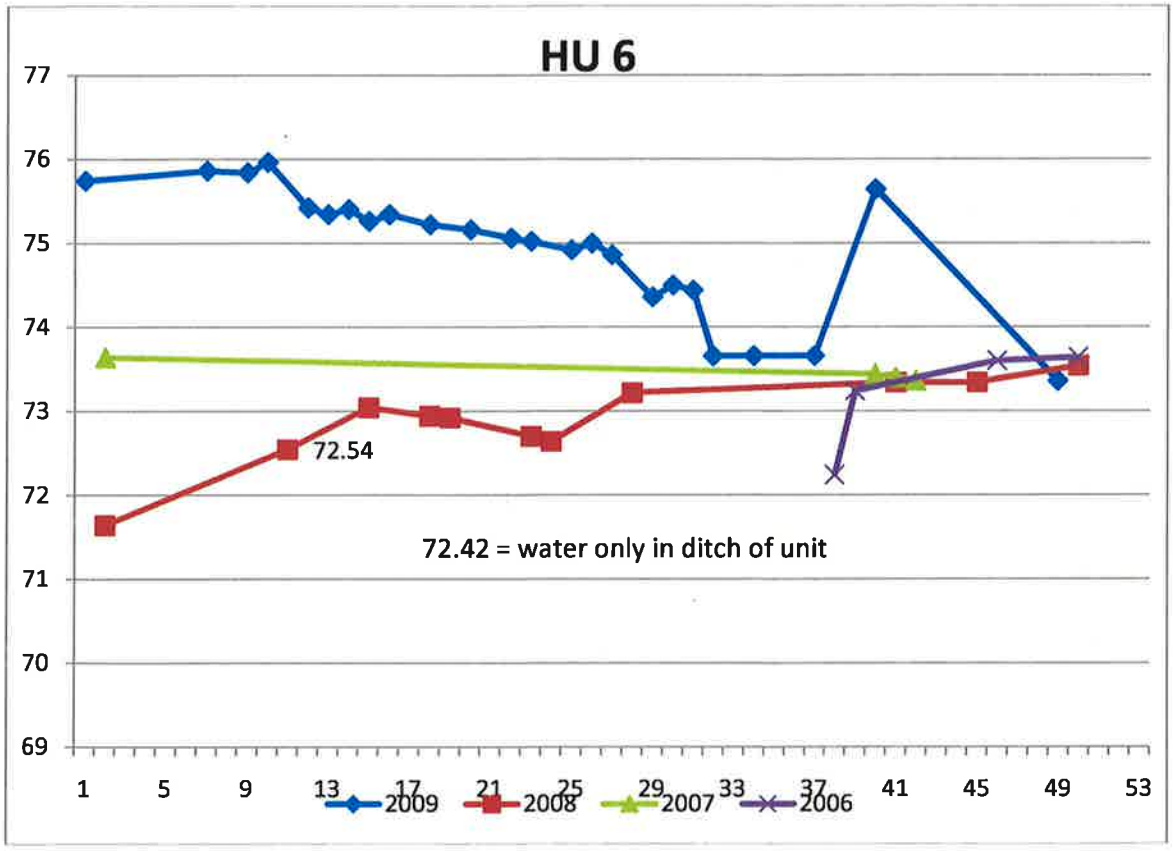
Unit: **MS 6** 499.99

Desired water level		Wk #	2010 Date	Actual Water level Staff reading	Notes
old	new			new	
			Jan.		
			Feb.		
2.4	75.26	10	Mar.	75.56 (2.74)	(575.55)
		11	17	75.54	Opened to C.C.
		13	29	75.48	
		15	Apr. 12	75.42	
			22	75.26	
			May 12	75.38	
			June 3	75.18	TR45-Scug, PBGR broods 4, 2
			11	75.24	
			18	75.12	
			July 2	<75.00	scummy
1.5	74.36				
			Aug. 1	74.74	
			10		→ water below plate... old 1.82
			23	Below	010 - 1.59
			31	Below	Old 1.4
			Sept. 16	1.18	Pumping up 17 - 1.68
			20	1.56	
1.5	74.36				
			Oct. 9	1.78	WL will vary, ~~pumping through to F46~~
					Take high water off before ice up
			25	75.42	Pumping up For HWb 28 - 75.42?
			Nov.		
			22	75.42	Opened 4" @ 2pm. Closed in pm
			29	75.38 or 2.58	Opened 5" @ 1:30 pm
			Dec. 30	75.03 or 2.83	Closed at 1:00 pm
			9	75.08 or 2.28	

Unit: Hunt Unit 6

Acres: 704

2009 Activity: High water was taken off in March & April via MS 6, into C.C. In August water pretty much was only in the ditch within the unit. The remaining water was let out via the MS ditch and the pipe from HU 6 to the MS ditch was replaced. A new staff plate was installed in the winter, but the old plate was removed without a survey to correlate old gauge readings.



Unit Goal: Provide foraging and resting habitat for migratory birds as well as provide a quality hunting area.

Objectives: Manage for good annual plant production and establishment of some perennial vegetation.

Strategies: Repair west dike. Draw down in coordination with construction.

Management Strategy Constraints:

Repairs Needed:

I. West dike leaks & floods private land owners crop field. Needs repaired ASAP.

I. Coffer dam in MS ditch needs removed for drainage, eagle's nest will delay construction activities.

Unit: **HU 6** - Full pool 575.40? HU 6 is suitable for fall waterfowl when the unit is equalized with MS6 at 575.40 or 2.54 according to the old gauge.

Desired water level	Wk #	2010 Date	Actual Water level Staff reading	Notes
		Jan.		
		Mar. 8	~~75.56 (2.74)~~	
	10	9	75.51	10 opened 3" to MS ditch (12pm) 11- closed 75.40
	11	17	75.40	Opened 8" 18- 75.24 19- 75.06
	12	22	below gauge	
		Apr.		
		28	6" below gauge?	opened to MS ditch.
		May 17	0	" "
		June		
		July		
		26		Construction on West + N dike started
		Aug. 1		
		Sept.		
				Begin flooding hunt unit
75.40?		Oct. 8		Started flood up through ditch + MS6
		12	74.94	75.40
		20	75.32	
		26	75.36	27 75.42 - Pumping up thru MS6 only
		10/26		Pumped for 2 hrs. MS pumpout of H2O. 75.42
		Dec 3	75.5	Open to Lower side, water coming
		6	75.3	across County line road
				Target 75.1 - 75.0

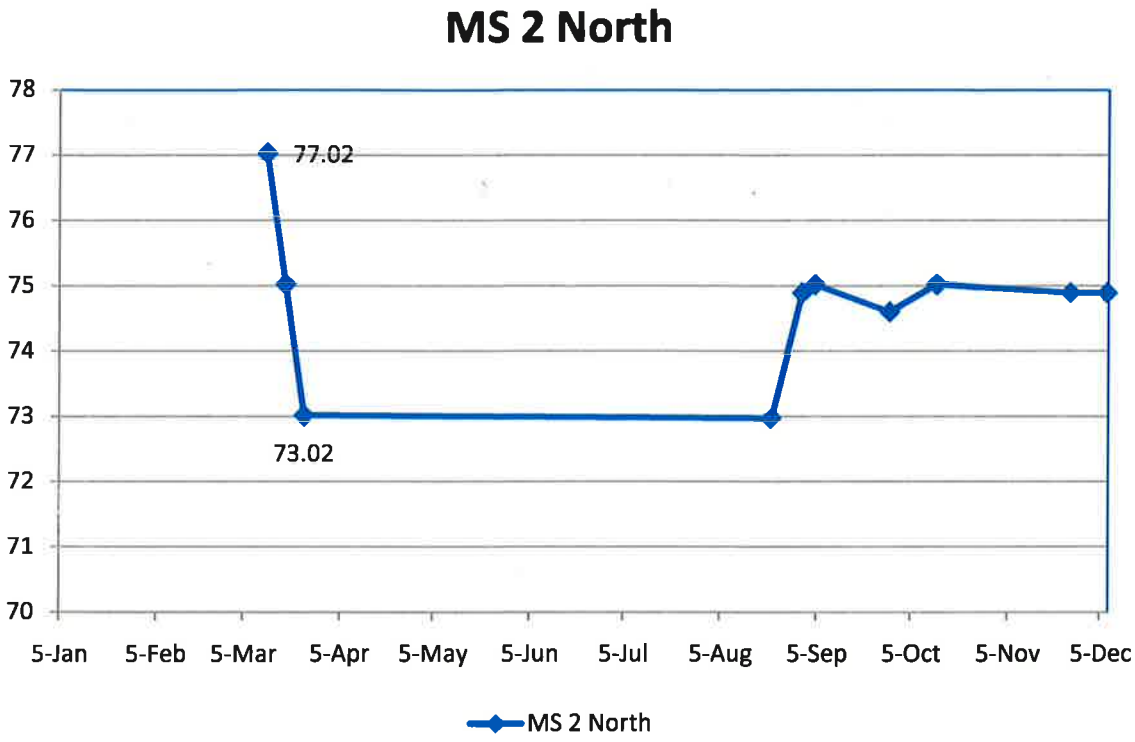
Dec 9 75.29

Unit: MS 2 North

Acres:

2009 Activity: Water was taken off in March to allow vegetation to establish on new dikes. A minimal amount of water was left on the eastern half of the unit to provide spring shorebird habitat. There was excellent shorebird use. In mid-August the unit was flooded via the pump on veler road.

Draw Down Years: 2009 – March through mid August.



Unit Goal: Provide foraging and resting habitat for migratory birds as well as provide a quality hunting area.

Objectives: Manage for good annual plant production and establishment of some perennial vegetation.

Strategies:

Management Strategy Constraints:

Repairs Needed:

II. Unit leaks into rail unit and west ditch when flooded.

Unit: MS2 North

Desired water level	Wk #	2010 Date	Actual Water level Staff reading	Notes
		Jan.		
	10	Mar. 9	75.12	
	11	17	75.12	Pulled boards (3) on rail unit 34"
	13	29	75.08	1,500 ducks (pintail, gadwall, mallard, wigeon)
76-77		Apr.		
76.66		22	~~74.80~~	75.46 Reset staff plate (was 74.80)
		28	76.14	Pump on (adding H2O) @ 30 - 76.30
		May 3	76.58	still pumping
		12	76.90	still pumping 14 - pump OFF
		17	76.60	- Found broken tile
76.0		June 2	76.64	COMO - 4
		11	76.06	
		18	≈ 75.9	Hard to read b/c cat tails growing in front of scale
		July 2		Cat tails grown around plate
		7	75.40	Shorebirds & mudflats
		Aug. 1		can't see plate. Lots of millet
		23	Below Plate	
		31	Can't see plate	
		Sept. 8	13 -	Turned pump on 14 - 61"
75.0		Oct. 9	75.98	
		20	76.10	28 - 76.06
		Nov 3	76.08	
		9	76.05	

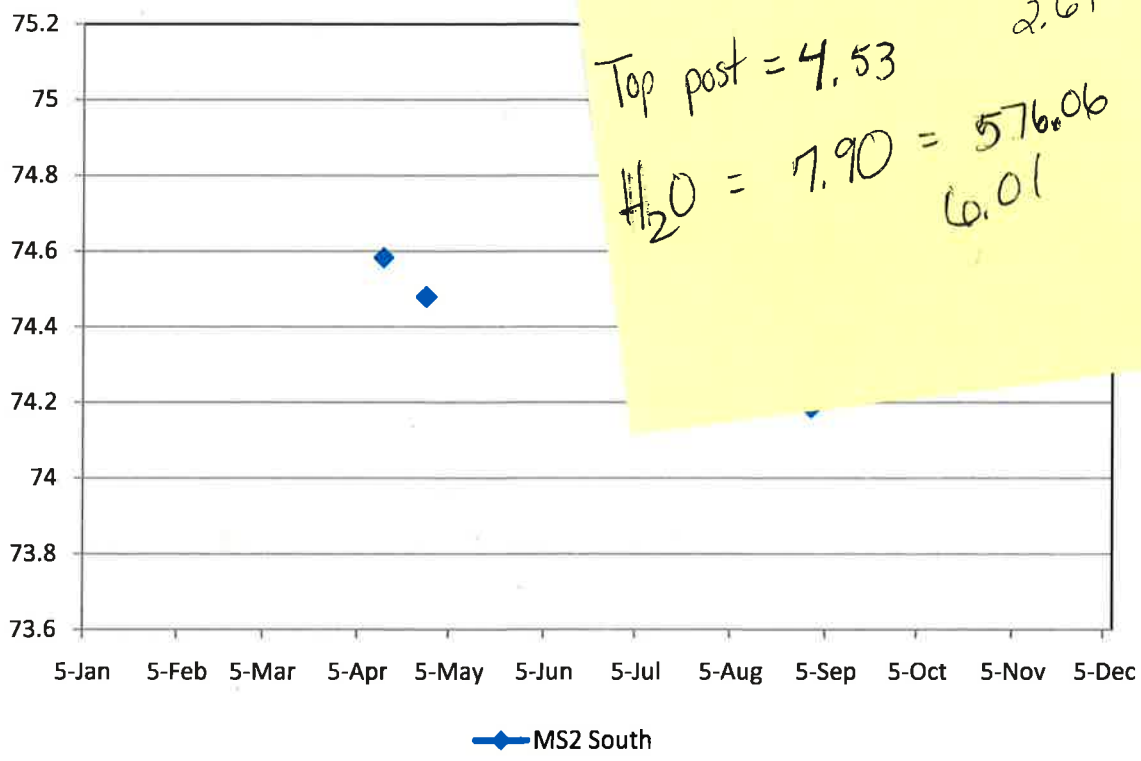
Unit: MS 2 South

Acres:

2009 Activity:. Water was taken off in March to allow vegetation to establish on new dikes. Water remained in borrow areas. The west half of the unit that is higher had lots of annual grass germiniation (foxtail, timothy, panic grass) and no real problem species. In mid-August the unit was flooded via MS2 north and the pump on veler road. Much of the NW part of the unit was not able to be adequately flooded

Draw Down Years: 2009 – March through r

MS2 South 4/22
BM = 58.07 = 1.89
Top post = 4.53 2.64
H_2O = 7.90 = 576.06
6.01



Unit Goal: Provide foraging and resting habitat for migratory birds as well as provide a quality hunting area.

Objectives: Manage for good annual plant production and establishment of some perennial vegetation.

Strategies:

Management Strategy Constraints:

Repairs Needed:

dikes R = 577.6?

Unit: **MS 2 South**

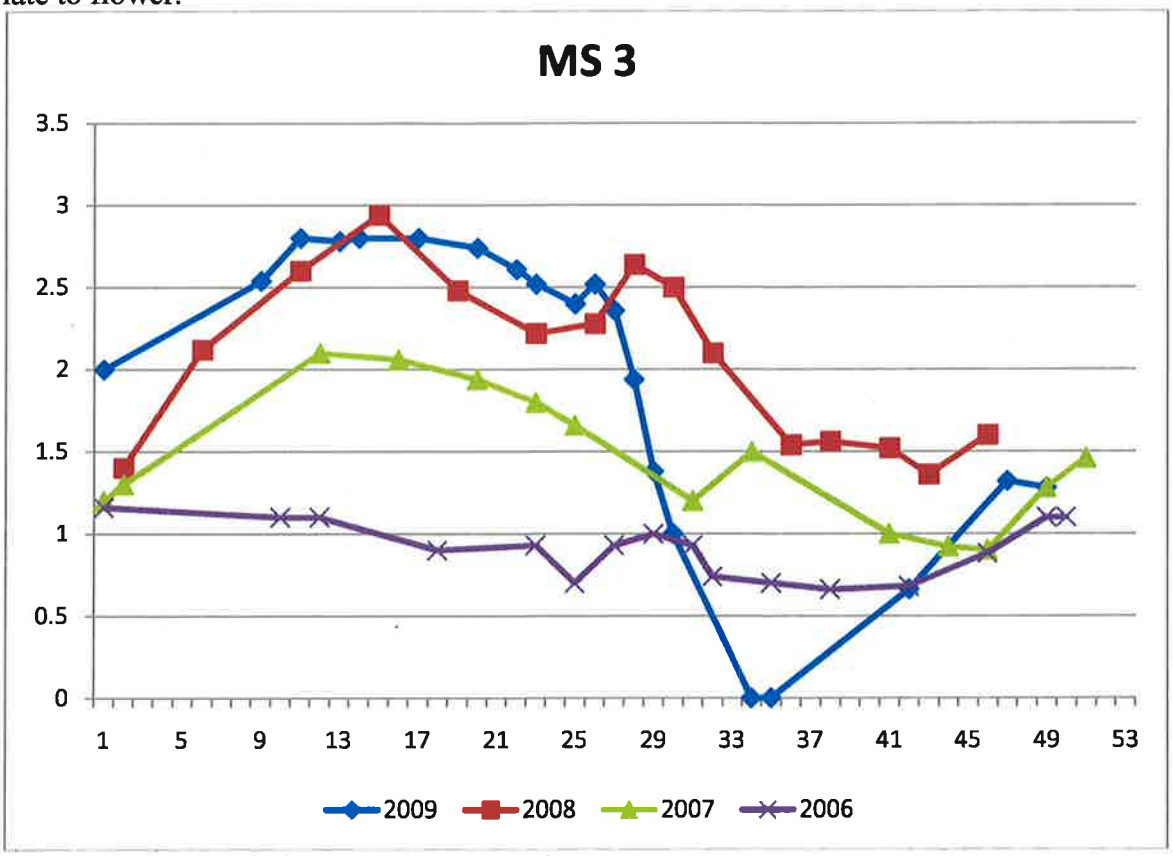
Desired water level	Wk #	2010 Date	Actual Water level Staff reading	Notes
	10	Mar. 9	75.14	
	11	17	75.12	
~~76.0~~	13	3/29	75.10	2,000 ducks (mallard, pintail, gadwall C. Geese)
		Apr. 27		
		22		Gauge Reset 74.8 → 76.06 @ 4/28
		28	76.31	9" From top board
~~76.0~~		May 12	76.64	
		17	76.70	
		June 3	76.64	
		11	76.75	
		18	76.64	
		July 2	76.50	
		7	76.36	
		Aug. 1	76.40	Lots of millet
		16	76.30	
		23	76.15	
		31	75.9	
		Sept. 8	75.8	
		14	75.82	MS ditch high enough to put some H_2O into unit
7 ~~76.9~~		24	76.4	Pushed boards down
~~75.5~~ 76		Oct. 9	76.24	
76.84		12	76.45	
		20	76.60	26 76.56 28 76.62 (top of board)
		Nov.		Additional board pushed down
		Dec 3	76.83	~2½" to Top board WCS, may need 1 more board
		9	76.86	

Unit: MSU 3

Acres: 225

2009 Activity: The unit was dewatered in early July so that the screw gates on the SE corner could be replace with a 30" screw gate and 24" stoplog structure. The draw down was able to be timed with fall shorebird migration and the unit got excellent shorebird use on the east and north half of the unit. The unit was dewater with the exception of the channel along the dike and a low area in the NE section of the unit. A cofferdam was installed in the interior drainage ditch that runs along the east dike so the structures could be replaced. There was excellent germination of millets, burreed, & water smartweed. There was some germination of velvetleaf on the SE corner. Construction was completed in late October and the unit was slowly flooded through November, until refuge hunts and iceup prevented pump access and use. The old water gauge was repositioned because it was leaning. It now reads 2 tenths higher (what was 2.5, is now 2.7). A new staff plate will be installed in summer of 2010 that will be correlated to true elevation.

Draw Down Years: 2009 – drawn down July 13 through October 21 for construction & fall shorebird migration. Excellent shorebird use & good germination of millet, but too late to flower.



*2007 – early in year gauge moved.

Unit Goal: Provide a nesting and feeding area for migratory birds as well as brood habitat.

Objectives: Maintain as hemi marsh. Provide emergent and submergent marsh habitat for waterfowl, swans, and rails.

Strategies:

Management Strategy Constraints:

Repairs Needed:

II. All dikes need muskrat damage repaired.

Unit: **MS 3** 573.12

Desired water level		Wk #	2010 Date	Actual Water level Staff reading	Notes
old	new			new	
			Jan.		
			Feb.		
			Mar. 8	1.74	574.86
			17	1.80	
2.5					
		13	29	1.84	
			Apr. 7	1.76	4/8 1.92 after last night's rain, some leaking through aquadrain boards
			13	1.96	
			28	2.02	
			May 4	2.02	Pumping up
			12	2.66	Pump OFF - Maxed out on pump ditch
			17	2.60	
			June 3	2.56	
			11	2.60	
			18	≈2.5	Really scummy
			July 2		muddy plate, can't read
			7	~~2.10~~ 2.10	West end seems dry
			27	2.10	
			Aug. 10	~~2.0~~ 2.0	
			23	1.8	Mossy PLATE
			31	1.8	
			Sept. 14	1.5 ? dirty	Opened to MS ditch @ top 2 boards. to fill
			17	1.62	
			24	1.70?	Put 1 board down (4"?)
~~1.71.9~~			30	1.78	≈16-18" below full pull
			Oct. 9	1.72	
			20	1.72	needs 6-8" more H_2O
2.3?			27	1.82?	pulled 3 boards, adding H_2O (only when ditch high enough)
			28	1.90	
			Nov.		
			Dec. 3	2.30	
			9	2.49	

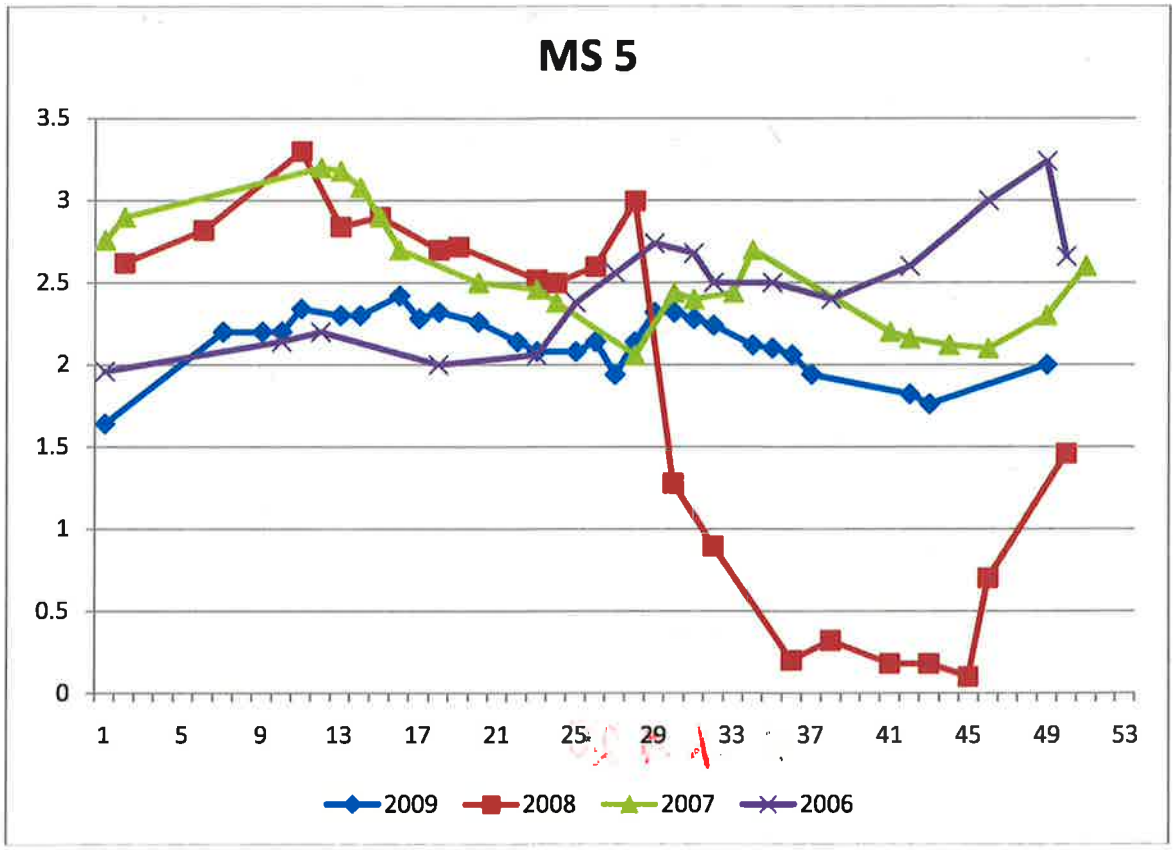
2011 - Leak stop by structure dikes smoothed out.

Unit: MSU 5

Acres: 256

2009 Activity: Water was added in July from MS3 via the MS ditch & gravity. Purple loosestrife is expanding in the unit, but cattail & water smartweed is expanding also.

Draw Down Years: 2008 – drawn down in early July and dry on the west side by August 1 for construction on west dike. Excellent shorebird use on eastern half of unit. Reflooded in early November; 2005- Drawn down in mid-March and reflooded in September when able (low lake levels were a problem for pumping)



Unit Goal: Provide a resting and feeding area for migratory birds.

Objectives: Manage for hemimarsh conditions and prevent further establishment of Purple Loosestrife.

Strategies:

Management Strategy Constraints:

Repairs Needed:

III. Monitor SW screw gate for leaks

Unit: **MS 5** 571.13

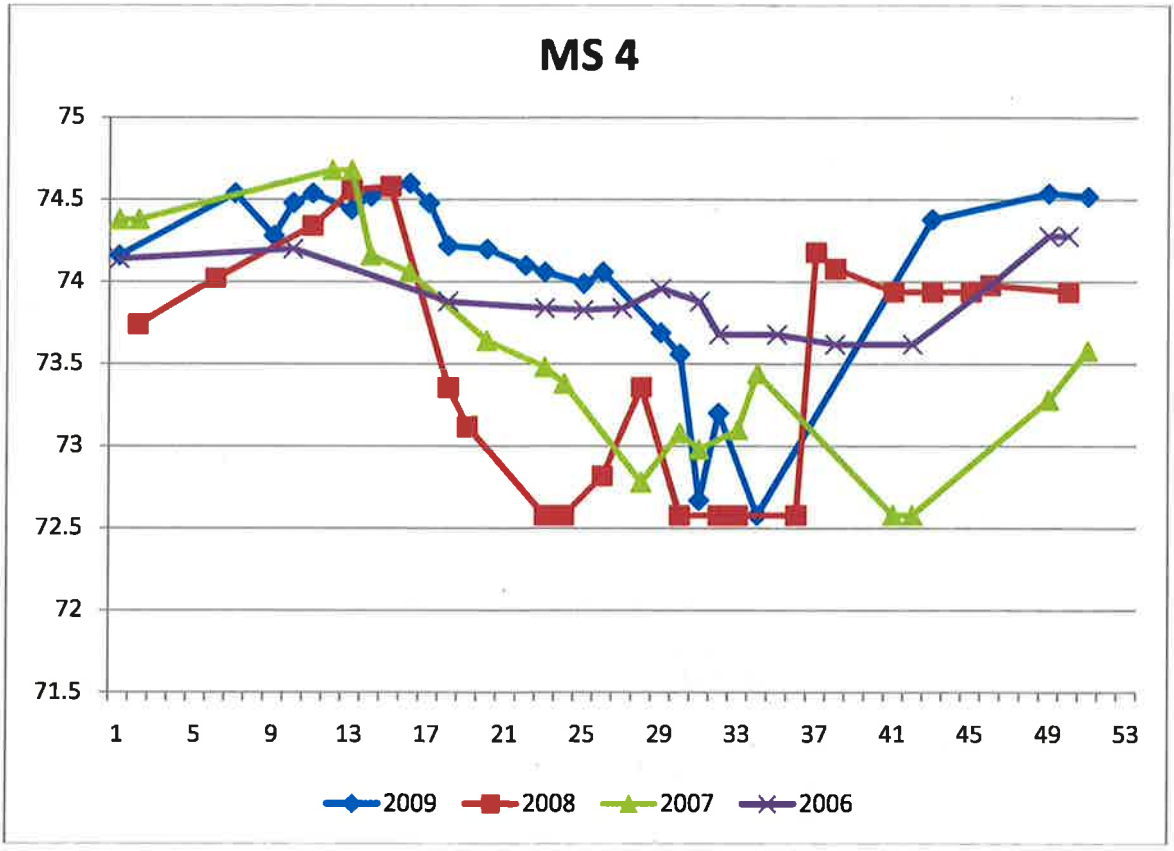
Desired water level		Wk #	2010 Date	Actual Water level Staff reading	Notes
old	new			new	
			Jan.		
			Feb.		
			Mar. 8	2.44	= (573.57)
		11	17	2.50	= 573.80 18- opened to ms ditch Putting H2O H2O
2.5-2.7			19	2.5	Closed into ms 5. no visible flow
		13	29	2.6	
			Apr. 7	2.53	(573.66)
2.5			May 3	2.68	
			12	2.70	
			17	2.70	
			June 3	2.66	TR45 8A9, 7eyg.
			11	2.75	
			July 2	2.50	
			7	2.38	
			26	2.44	
			Aug. 1	2.54	
			6	2.36	(lost H2O from ms ditch)
			16	2.3	
			23	2.25	pumping into Tuma Farm Ditch
			Sept. 7	2.0	
2.0-2.2			Oct. 9	2.08	
			25	2.00	1300 ducks atleast
			Nov.		
			Dec. 3	2.30	
			9	2.18	

Unit: MSU 4

Acres: 112

2009 Activity: The water control structures in the SE corner badly deteriorated and leaked water into the MS ditch. Therefore, the unit did not hold adequate water levels and invasive Flowering rush, phrag, and reed canary grass dominated the vegetation (with the exception of preexisting cattail stands). A new staff plate was installed in the winter. 74.52 is equal to 1.94 on the old staff plate.

Draw Down Years: 2009 – leaking structure resulted in a draw down in July through late October. 2008 – Vandalism of the NE screw/flap gate drew water levels down in early April. The unit was then managed for spring shorebird habitat, and reflooded in early September. Excellent shorebird use and millet germination. 2007 – Evapotranspiration resulted in a partial drawdown in July and again in September through November. 2004 – Drawn down in April for shorebirds and to encourage aquatic veg, reflooded in late October.



Unit Goal: Provide a nesting and feeding area for migratory birds as well as brood habitat.

Objectives: Repair east dike/road.

Strategies: Draw down in early spring for construction and flood immediately. Maintain high water levels to combat flowering rush and other invasives.

Management Strategy Constraints:

Repairs Needed:

I. SE WCS need replaced

502.99

Unit MS 4 72.88- water only in ditch and low areas on north side. 73.98 required to ha[...] whole unit (2" on high ground of west side)

74.61 is 2.62' below top of box

top of box is 77.23?

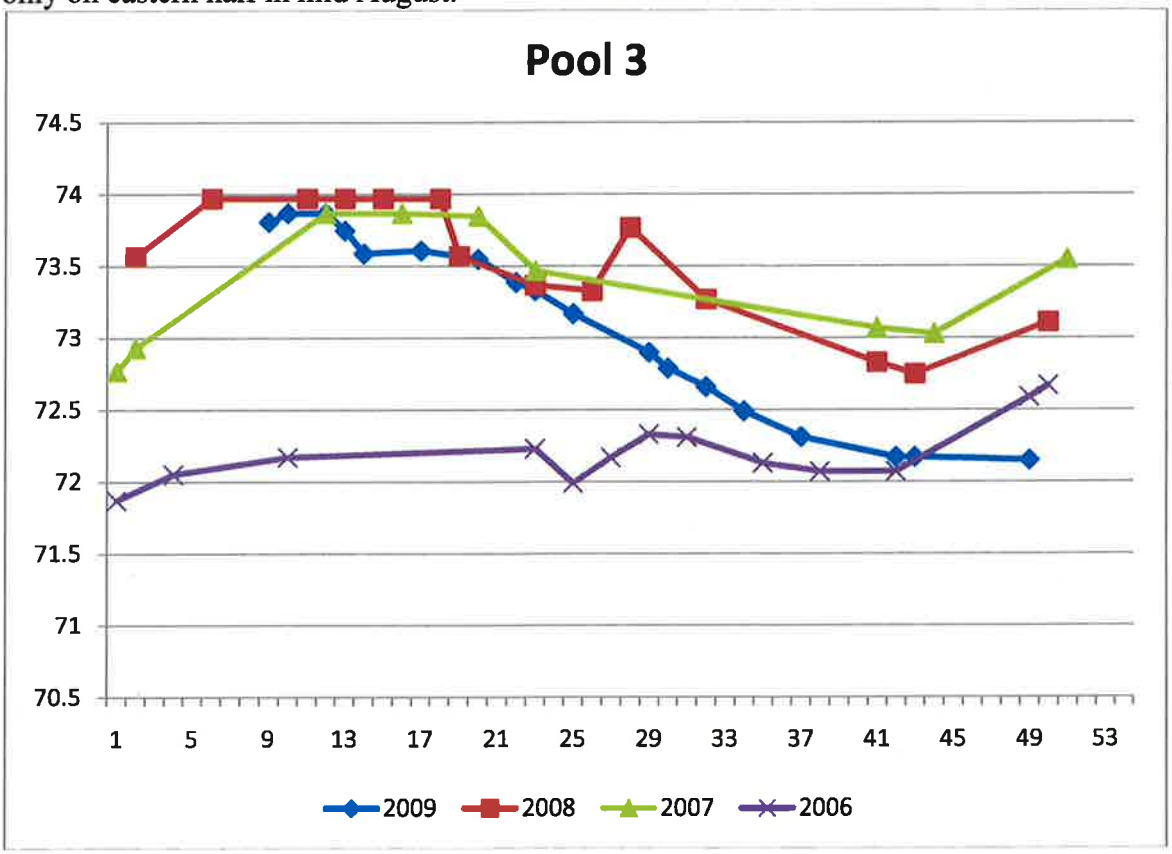
De[...] wat[...]			[...]ual	Notes
				(577.81) 3/15- 75.50 -Opened to MS ditch
				Closed 19- 1.46 Opened
			e	~~Draw down for construction~~ H2O mostly in ditch + ponds. 400 ducks + 6 yellow legs
				Reset staff plate. it was 9/10 off 72.48?
		26		
		May 3	72.20	5/4- Added board b/c Flooding MS3
		12	72.34	~~Refused~~ - Lid Missing
		17	72.30	
~~25.0~~ 74.61		June 3	72.24	Extensive FR, 75% flowering
		11	72.34	
		July 2		Bottom of plate to muddy water ≈ 6" below 72.40
		26	1" below plate	Pumping up
		Aug. 21	No plate	Being worked on
		Sept. 7		begin reflooding
~~74.38~~ 74.61		Oct. 9	No gauge	
		Nov.		
		Dec.		

Unit: Pool 3

Acres: 240

2009 Activity: High water was let out in March. Evapotranspiration resulted in water only remaining in pool on east half. A new staff plate was installed. 72.2 = 1.63. (72.2=572.2ft)

Draw Down Years: 2009 – Evapotranspiration resulted in low water levels, with water only on eastern half in mid August.



Unit Goals: The primary objective of this unit is to provide food resources and resting cover for migratory waterfowl, waterbirds, nesting Bald Eagles and other wetland animals. In addition water levels are managed to encourage native wetland plants and discourage exotic invasive species.

Objectives: Manage for hemi marsh conditions.

Strategies: Draw down & conduct a late summer burn to remove leaf litter and make areas more accessible to migratory birds. Reflood for fall shorebirds.

Management Strategy Constraints:

Repairs Needed:

Unit: **Pool 3 -** (72.2=1.63)

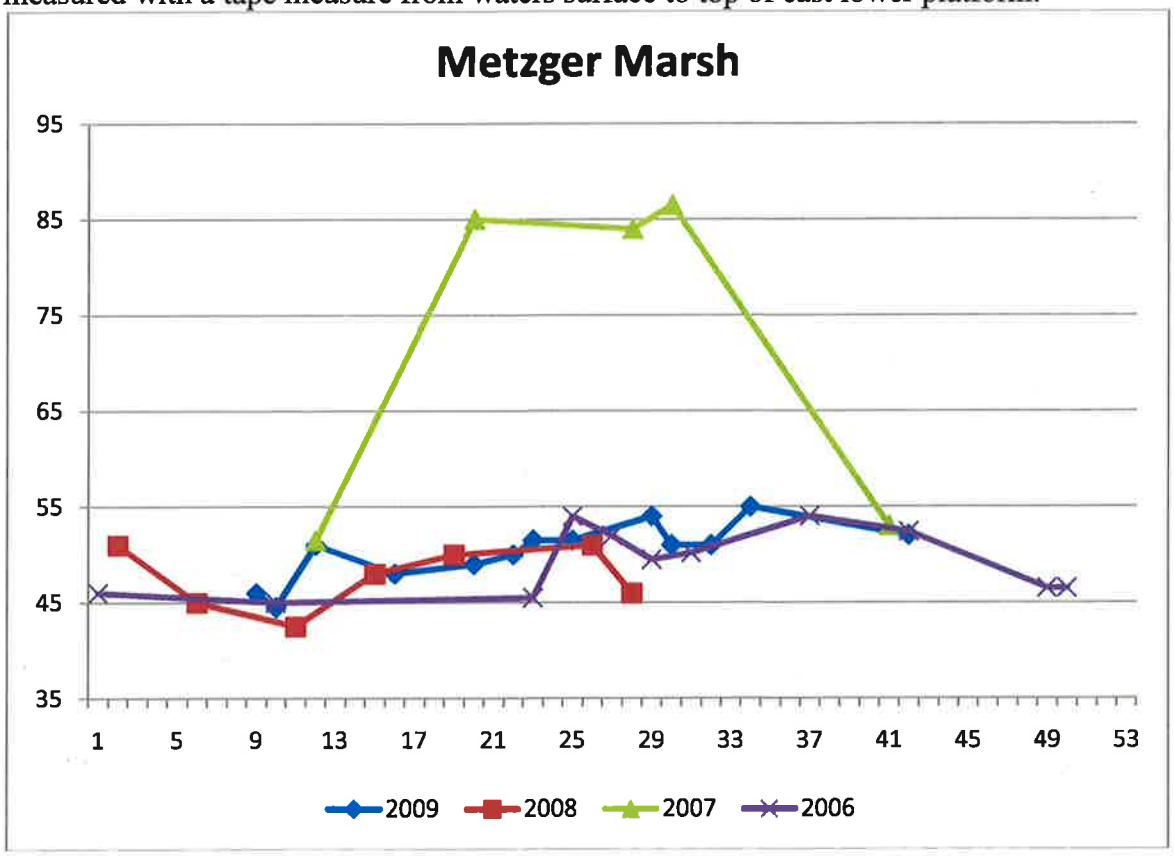
Desired water level	Wk #	2010 Date	Actual Water level Staff reading	Notes
		Jan.		
		Feb.		
	11	Mar.11	72.72	500 swans?
73.87 -	13	29	72.78	
74.17		Apr.7	72.72	
		12	72.90	
		May		
		12	73.08	
		June3	73.05	WOOD ♂ 204
		11	73.10	
		July2	72.80	Draw Down?
		7	72.68	Opened to C.C 4"
		20	71.88	
		26	71.90	
		Aug.1	71.90	
		11	71.5	
		17	71.56	Burn?
		23	71.6	8/31 71.4
		Sept.8	71.48	
		Oct.9	Drawdown	
72.67				
		Nov.		
72.67				
		Dec.6	Drawdown	Both gates closed, need to set to flow in maybe in spring?

2011- Set flaps in spring to allow water in
Make sure gate is closed.

Unit: Metzger Marsh

Acres:
2009 Activity: High water was let out March 11 & 12.
Draw Down Years: 2007 – Drawn down by mid May and reflooded in September; 2004 – Drawn down mid-May and reflooded early August.

For chart, remember high water number readings, mean lower water levels. Water is measured with a tape measure from waters surface to top of east lower platform.



Unit Goal:

Objectives:

Strategies: Allow fish passage after trapping season and as soon as ice thaw allows. Close gates by June 1.

Management Strategy Constraints:

Repairs Needed:

Unit: **Metzger Marsh** - Measure from waters surface to top of lower platform on unit side. Maintain full pool for control of invasives.

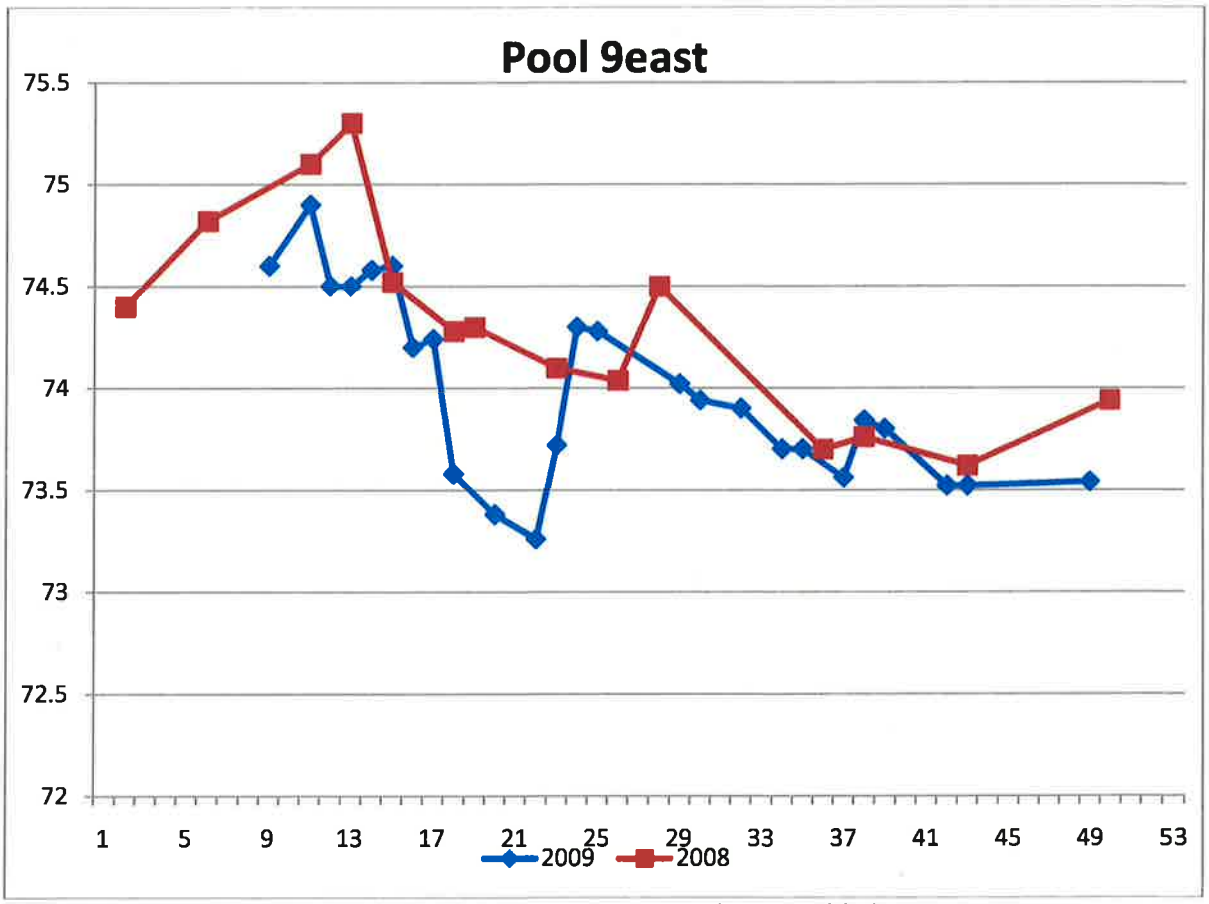
Desired water level		Wk #	2010 Date	Actual Water level Staff reading		Notes
old	new			old	new	
			Jan.			
			Feb.			
			Mar. 17	5½"		
50"						
			Apr. 12	51"		Lake is 59" NE wind
			May			
			June			
			July			
			Aug.			
			Sept.			
			Oct.			
			Nov.			
			Dec.			

Unit: Pool 9 East

Acres: 77

2009 Activity: High water was let out in March. At the end of April, water was let out for construction on Veler Rd berm. Unit was pumped up with a portable pump in early June. Unit received excellent shorebird use while drawn down and excellent teal and dabbling duck use in the fall. A new staff plate was installed. 1.32=73.62.

Draw Down Years: 2009 – drawn down for 1 month (mid may through mid June) for construction. Reflooded in June. Evapotranspiration resulted in low water levels and small areas of mudflats through the fall; 2006 – March draw down for april burn. Reflooded in April after burn with portable pumps. Flooding took longer than expected and unit greened up before flood. Reed canary grass was sprayed a few weeks after.



Unit Goals Provide resting and foraging habitat for migratory birds.

Objectives: Manage for hemi marsh conditions.

Strategies: Maintain full pool.

Management Strategy Constraints:

Repairs Needed:

Unit: **Pool 9 east** - 73.6 = 2" or less over most of unit (excluding borrow area)

Desired water level	Wk #	2010 Date	Actual Water level Staff reading	Notes
		Jan.		
		Feb.		
	10	Mar. 9	73.94	
	11	17	73.98	
		29	74.04	(1.8) 600 ducks
75.3		Apr.		
		May 17	74.20	(2.0)
		June	74.20	
		15	74.22	
		July 2	74.00	
		7	73.90	
		Aug. 1	73.90	
		23	73.78	
		31	73.6	
		Sept. 8	73.54	
		16	73.48	
		23	73.53	27 - 73.66
>73.6		Oct. 9	73.82	
74.0?		25	73.97 → ?	26 - 73.76
		Nov.		
		Dec. 9	73.90	

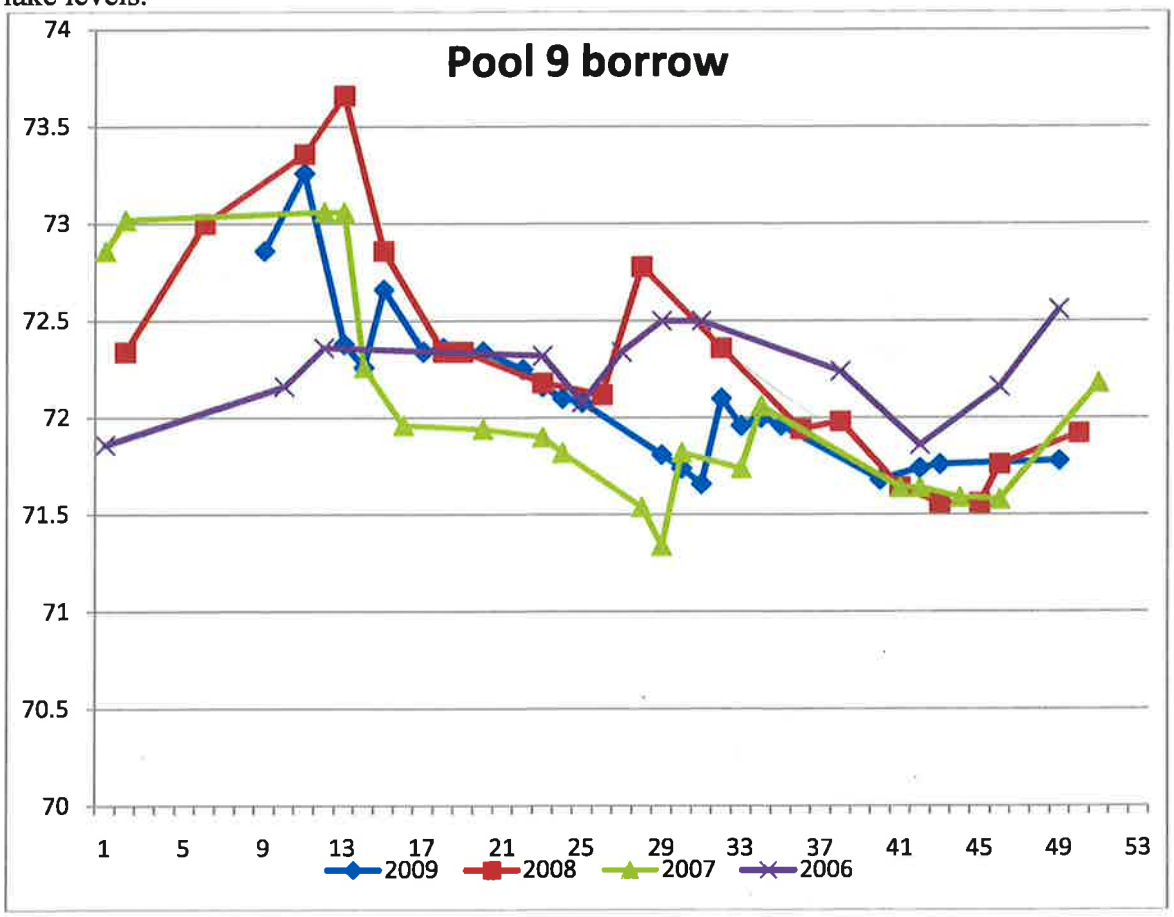
probably too high

Unit: Pool 9 borrow area

Acres: 38

2009 Activity: High water was taken out in March & April. The unit was opened to Crane Creek again in August to add water. More was added than intended, but high lake levels and high water in Veler ditch prevented dewatering for more ideal water levels the remainder of the year. A new staff plate was installed, 1.62=71.88.

Draw Down Years: 2005 – Unit was dewatered by mid-May. Good veg response. Unit was reflooded in September, but had difficulties with ditch veg clogging intake, and low lake levels.



Unit Goals: Provide habitat for waterfowl, wading birds, and shorebirds. Provide public use waterfowl hunting opportunities.

Objectives: Obtain 19 acres of deep to shallow submergent vegetation and 19 acres of deep to shallow emergent vegetation. Control Eurasian watermilfoil. Maintain 3 water blinds for waterfowl hunting season.

Strategies:

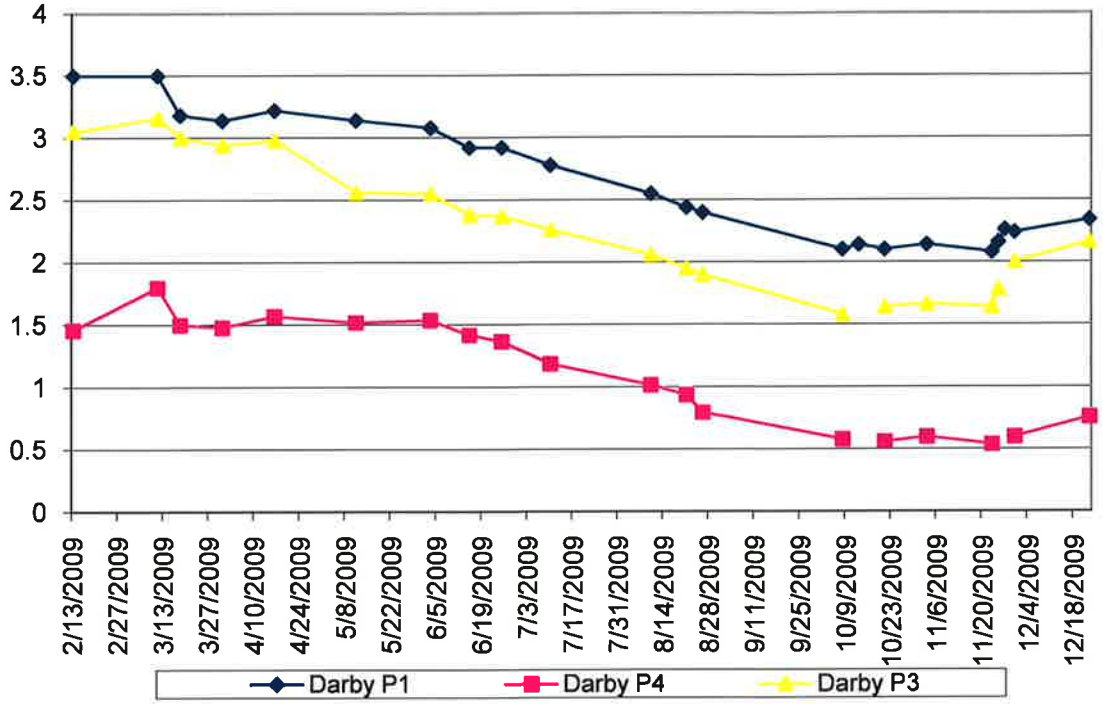
Management Strategy Constraints:

Repairs Needed:

Unit: **Pool 9 borrow area** (1.62=71.88)

Desired water level	Wk #	2010 Date	Actual Water level Staff reading	Notes
		Jan.		
		Feb.		
	10	Mar. 9	72.3 (72.10)	200 Redheads by 11
		17	72.38	Opened to lake 3/19 - 71.9 500 ducks by blind 12
				Gadwall, wigeon, shovelers
71.96(1.7)		29	71.48	350 ducks by blind 12, 500-800 ducks by 10-11
		Apr.		
		May 12	71.78	Pump unit down 2:30pm 18- Pump off Not working
		25	71.30 (1.04)	
				Mudflats
		June	Below (70.86)	1/3 - 1/2 mud flat east side, little on west side
		11	5" below 71.56	
		15		0.52 Needs plate 71.32 and lower
		July 2	below	old - 0.34
		Aug. 10	below bottom	
		23	below dam 2	
		31	below plate	Reflood
		Sept. 22		0.82? - old 23 - 0.9?
		23		
		Oct. 1	71.4 1.17	
71.06		9	71.38	
		12	1.10	
		25	1.06	
		Nov.		
		Dec. 9	1.20 7.49	

Darby



Key for Priority Rankings under "Repairs Needed section"

I – Urgent & Important

II – Not Urgent, but Important

III – FYI only

Dick Churness
Work - 216-363-6636
cell - 216-469-3210

Unit: Darby Pump Operations & Pump Ditch settings

Week #	Desired water level	2010 Date	Actual Water level Staff reading	Notes
		Jan.		
		Mar.		
10		9		Open ditch to lake ASAP
		Apr.		
		26		Closed Flap
		May		
		12		Turned pump on 5/18 - Both pumps on
		22		1 pump OFF 5/28 - Pump OFF
		June 1		Pump on 6/7 - Pump OFF?
		15		Pump on
		July 7		Pump OFF
		26		Pump #2 on
		30		Pump #2 Found not working. Turned pump #1 on
		Aug. 1		Pump #1 still running
		Sept. 13		Pump #1 on. Pump 2 still not working!
		23		Pump OFF
		28		Pump on
		Oct. 1		Pump for churness (1 pump)
				Open ditch to lake b4 ice

Pump for churness before big duck
He wants water a week b4 Big duck starts.

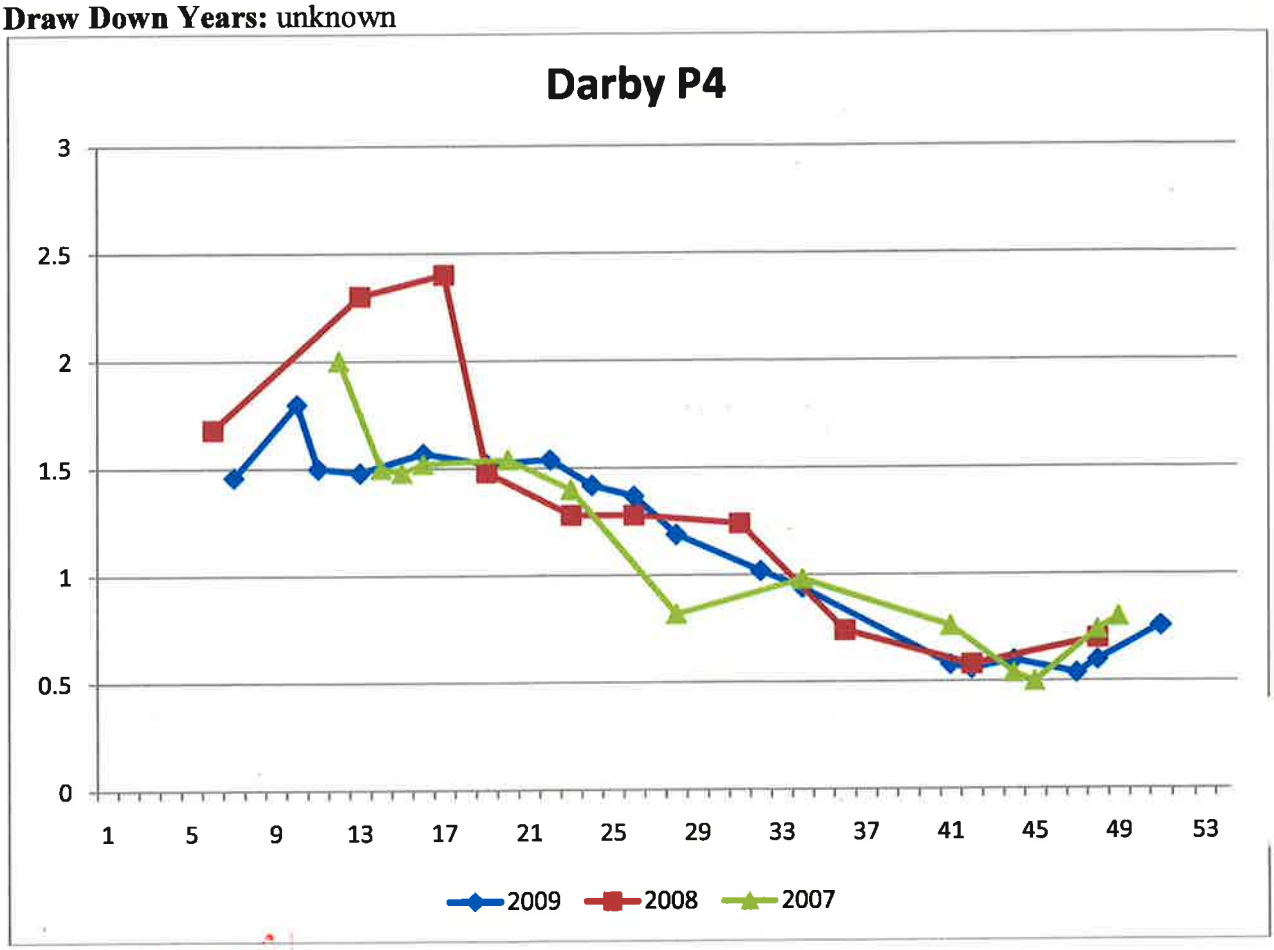
- 1 pump not working @ Darby (ditch side)

Unit: Darby Pool 4

Acres: 170

2009 Activity: High water was taken off in March.

Draw Down Years: unknown



Unit Goal: Provide marsh habitat for migratory birds.

Objectives: manage for plant diversity and hemi marsh conditions.

Strategies: Draw down for spring shorebird migration and to encourage vegetation growth.

Management Strategy Constraints: Unit has a history of purple loosestrife infestations. Particularly along the SE corner.

Repairs Needed:

Unit: **Darby Pool 4**

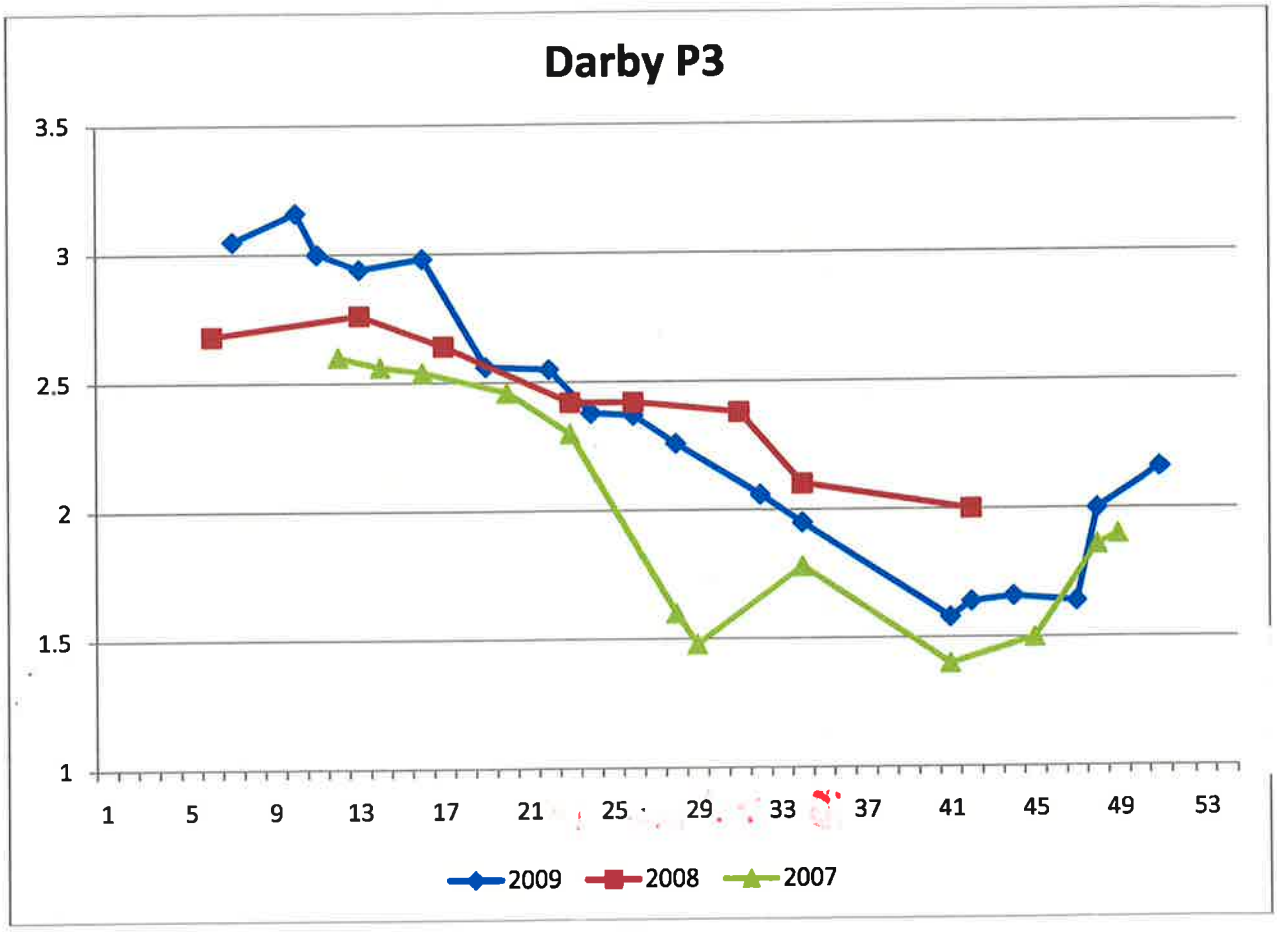
Week #	Desired water level	2010 Date	Actual Water level Staff reading	Notes
		3/8	1.0	
		Mar. 3	1.0	
		18	1.08	
	1.5			Open to lake?
		Apr. 9	1.16	2cms WF
		26	1.26 →	Draw down - opened 10" 28 - 0.98 opened to 15"
		~~May~~ 30	0.62	
		May 3	0.20? Dirty	
		17	0.30	Turned Pump on 15 - 0.1 17 - 0.0
		24	4" below plate	Mudflats 28 - 2" below board
		June 1	2" below plate	6/3 - 4" below plate bottom of board still under H2O
				6/5 - 1" below bottom of board. 20 WOPO.
		15	0.10	turned pump on 17 - 1" below staff plate 30 MALL
		21	4" below staff	plate 23 - 1-2" below board
		July 2		Pump OFF + gates closed. 6 - 2" below board
		7		
		20	6" below board	
		26	6" below	board
		Aug. 10	>1' below	plate
		23	1' below	Pond very Dry
		31	10" Below	bottom of wood estimated
		Sept. 13		Turn pump on & open for flooding
		14	6" below board	
		20	2" below board	23 - 1/2" below plate. Pump OFF
		28	4" below plate	- Pump on ?
		Oct. 1	2" below plate	Pump switched to Chernesss
		19	" "	1500 ducks?
		Dec 9	1/2" Below Plate	ICE

Unit: Darby Pool 3

Acres: 25

2009 Activity: 1 board was pulled in mid April. The board likely slid down earlier in the year. Evapotranspiration resulted in shallow water and mudflats in early October at 1.58. Water was pumped in in November.

Draw Down Years: 2006?



Unit Goal: Provide resting and foraging habitat for migratory birds.

Objectives: Provide a combination of both annual and perennial vegetation in a hemimarsh.

Strategies:

Management Strategy Constraints:

Repairs Needed:

II. South dike needs raised

Unit: **Darby Pool 3**
Full pool (2.64)

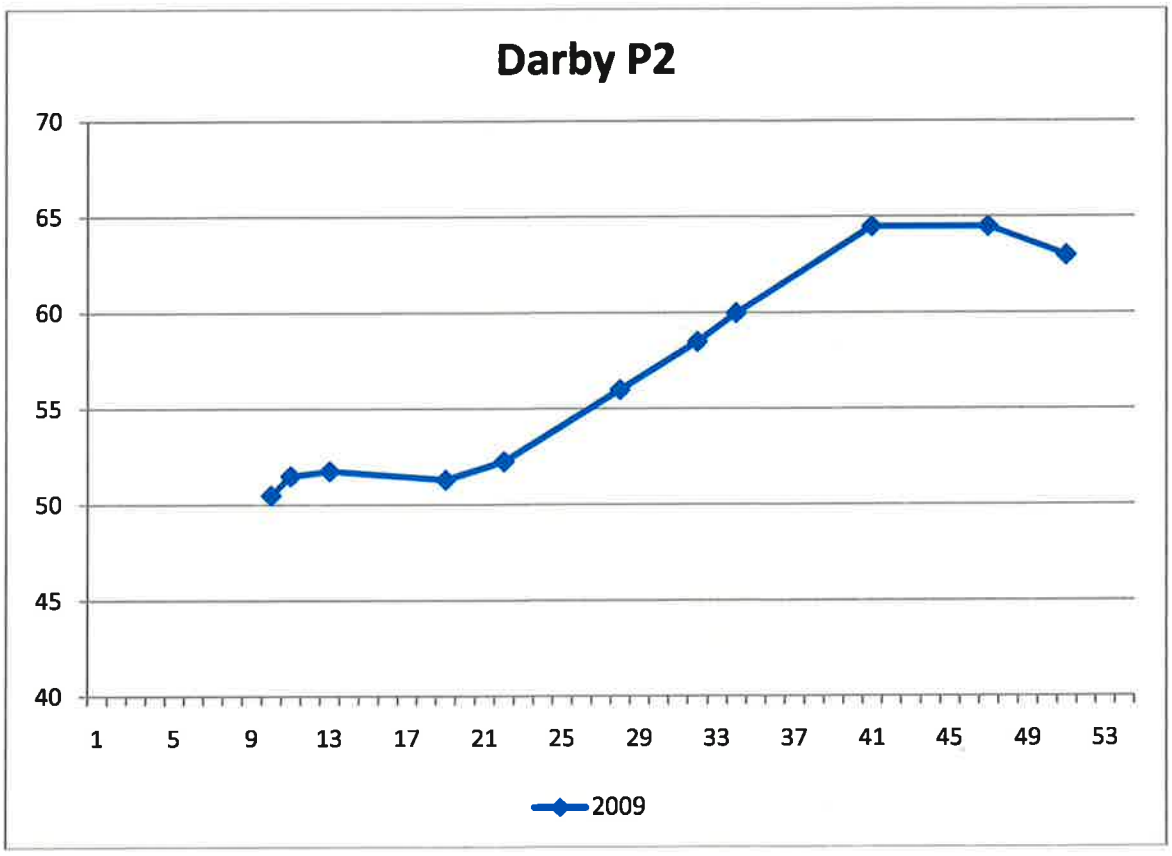
Week #	Desired water level	2010 Date	Actual Water level Staff reading	Notes
		3/8	2.64	Ditch flowing into unit
		3/10		Ditch opened to lake
10		Mar. 8	2.64	ditch flowing into unit
		Apr. 9	2.70	30 WF
		28	2.68	
	2.5-2.6			
		May 12	2.64	
		25	2.62	
		June 1	2.58	5th 2.52 8 WOPO open area NW corner
		10	2.46?	Scale is covered in muck
		21	2.38	
			2.	
		July 7	2.12	mud on E side
		26	1.98	Pulled 2 boards - filling w/ Pump
		28	2.1	Put boards down, pump still on
		Aug. 1	2.0	
		6	2.3	Pump off 10 - 2.3
		23	2.9	
				31 - measured in box 69"
		Sept. 14	1.98	
		20	1.94	
		Oct. 1	1.90?	
		19	2.0?	
		Dec 9	2.5	

Unit: Darby Pool 2

Acres: 25

2009 Activity: A 4" board was added in March making full pool around 49" from water to top of agridrain box.

Draw Down Years: unknown



Unit Goal: Provide resting and foraging habitat for migratory birds.

Objectives: Manage for hemi marsh conditions

Strategies: Manage unit at full pool. Install new water gauge.

Management Strategy Constraints:

Repairs Needed:

Cedar Point NWR

Unit: **Darby Pool 2**
Maintain full pool. – Measure waters surface to top of box on SW corner

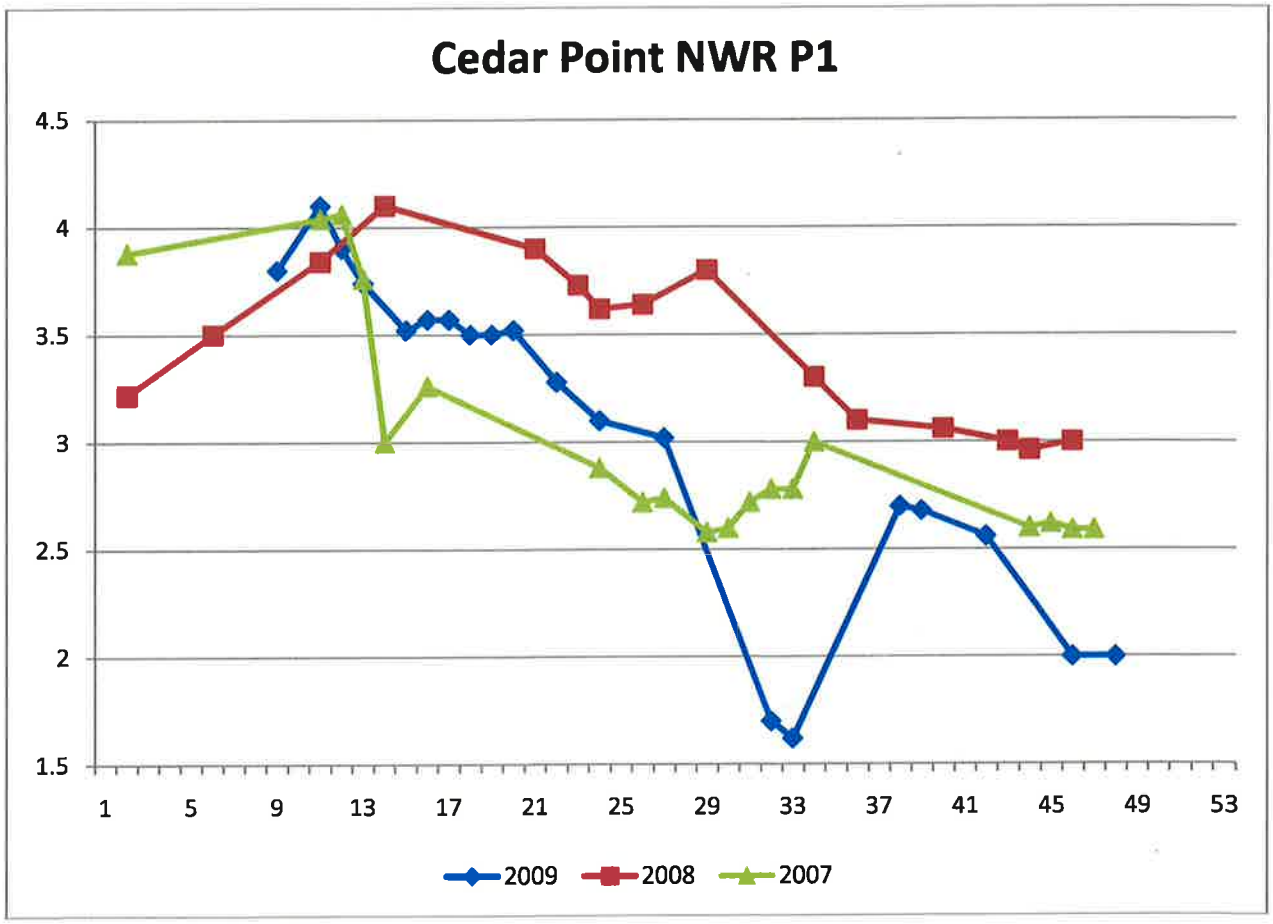
Week #	Desired water level	2010 Date	Actual Water level Staff reading	Notes
		3/8		58 1/2"
		Mar. 8	58 1/2"	
		Apr. 9	56 1/4	20 WF
		28	56"	
		May 12	55 1/2"	
		25	56"	
		June 17	58"	
		July 7	62"	
30		26	64"	Pulled 1 board pumping up
		Aug. 23	67 1/2"	
		31	69 1/2"	
		Sept.		
		Oct. 19	73"	20 - Pumping up for 1 day. Boards lifted up
63"-64"		25	68"	Pumping up for 1 day.
		Dec 9	61"	

Unit: Cedar Point Pool 1

Acres: 1,460

2009 Activity: Evapotranspiration leads to partial draw down. Pump was turned on in early August. A log stuck in the screw/flap gate structure found on Nov. 12 allowed water to flow into lake. Pipes in structure rusted through and leaking. Structure needs replaced. Pump 1 was being repaired all season, and has yet to be installed. Pump 2 bearings are going bad and needs repairs.

Draw Down Years: 2009, 2007, 2006, 2005 - Evapotranspiration leads to partial draw down.



Unit Goal: Provide nesting, foraging, and resting habitat for a variety of migratory birds and wildlife. To maintain populations of rare and endangered plants.

Objectives: Maintain full pool.

Strategies:

Management Strategy Constraints:

Repairs Needed:

I. West side WCS needs temporarily plugged & replaced. done in 2016 something

I. Pump1 needs repaired.

Unit: **Cedar Point Pool 1**

Week #	Desired water level	2010 Date	Actual Water level Staff reading	Notes
		Jan.		
5		Feb 4	1.80	Water flowing, stick in gate (R.H.) 3/8 2.4 ga
	3.7- 4.0	Mar. 8	2.40	gate still leaking 3/17 2.38 leaki
		3/17	2.38	
12		3/22	2.40	Pump hole not connected to unit. 20-50,000 Scaup on Maumee
			?	Gate filled in to stop leaking Bay ?
		Apr. 4/6	2.32	
		4/14	2.60	
		May		
		19	2.76	
		June 1	2.72	3 Adult Black terns, 1 nest found w/ 2 eggs
		8		
		July		
		Aug. 2	2.1	Pump 2 7757 → Pumps can't run yet
23		17	1.8	Pump 1 6708 b/c installation isn't
		27	1.7	complete
		Sept. 15	1.4	Pumps turned on. #2 won't stay on
		20	1.46	6813 #1
		11/16	↓	Closed gate from Pump station for construction.
		~~Oct.~~ 11/18		Gate Opened, Pump box repaired.
		11/22	→	Pump #1 on. set on auto. 11/23 Found OFF
		11/29	→ Pump #1 turned	on auto (6922 hours)
		12/1		Called Toledo Pumps Station to turn pump OFF.

2011 Concerns - Getting H2O, P.L. + Phrag.

- Not sure if we can get water out (pump side of box may open but will it close completely? Or will rock/sediment prevent it from closing all the way.)
- Floats need to be adjusted + Fixed on both
- Pump 2 needs fixed
- Will need to pump in the spring

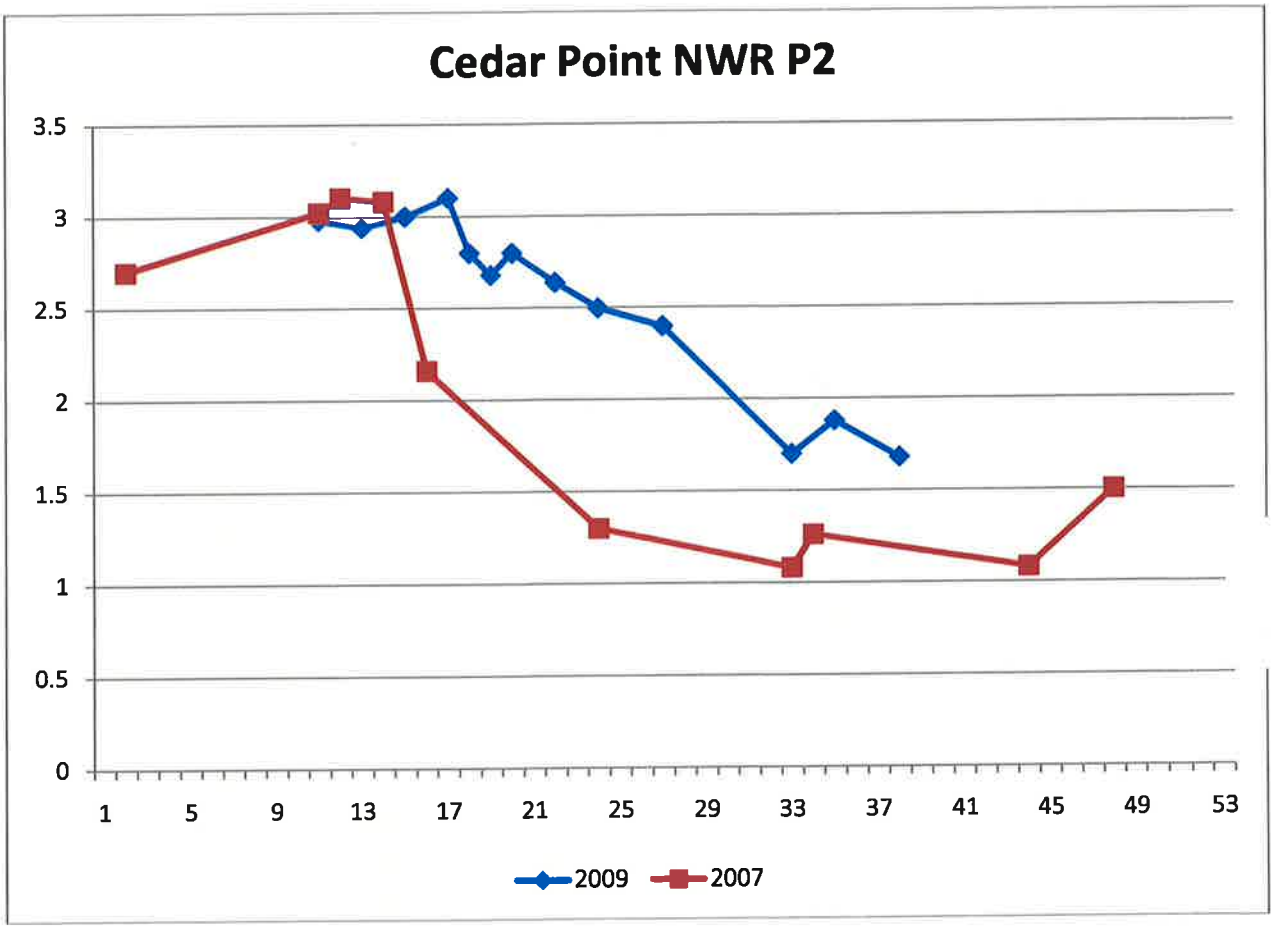
+ possible project to long-term Fix silt problem in unit

Unit: Cedar Point Pool 2

Acres: 135

2009 Activity: Not sure if the new flap gate between the borrow area and unit is functioning properly. It may be holding water in the borrow. High water was let out of the borrow into Pool 1 in April and early May. No other management. Water levels seemed low in fall and Phrag expanded in unit.

Draw Down Years: 2007 – unit was pumped down with portable pump and completed by end of May for construction on west dike. Unit was reflooded in November with the pumps located at Toledo Pumping station.



Unit Goal:

Objectives:

Strategies: Maintain full pool and treat invasives.

Management Strategy Constraints:

Repairs Needed:
II. Check new flap gate to ensure proper function.
Unit: **Cedar Point Pool 2**
Keep water as high as possible, without flooding neighbor's woods (max is 2.70)

Dick Churness
Work - 216-363-6638
Cell - 2183210869

Darby

Unit: Darby Pump Operations & Pump Ditch settings

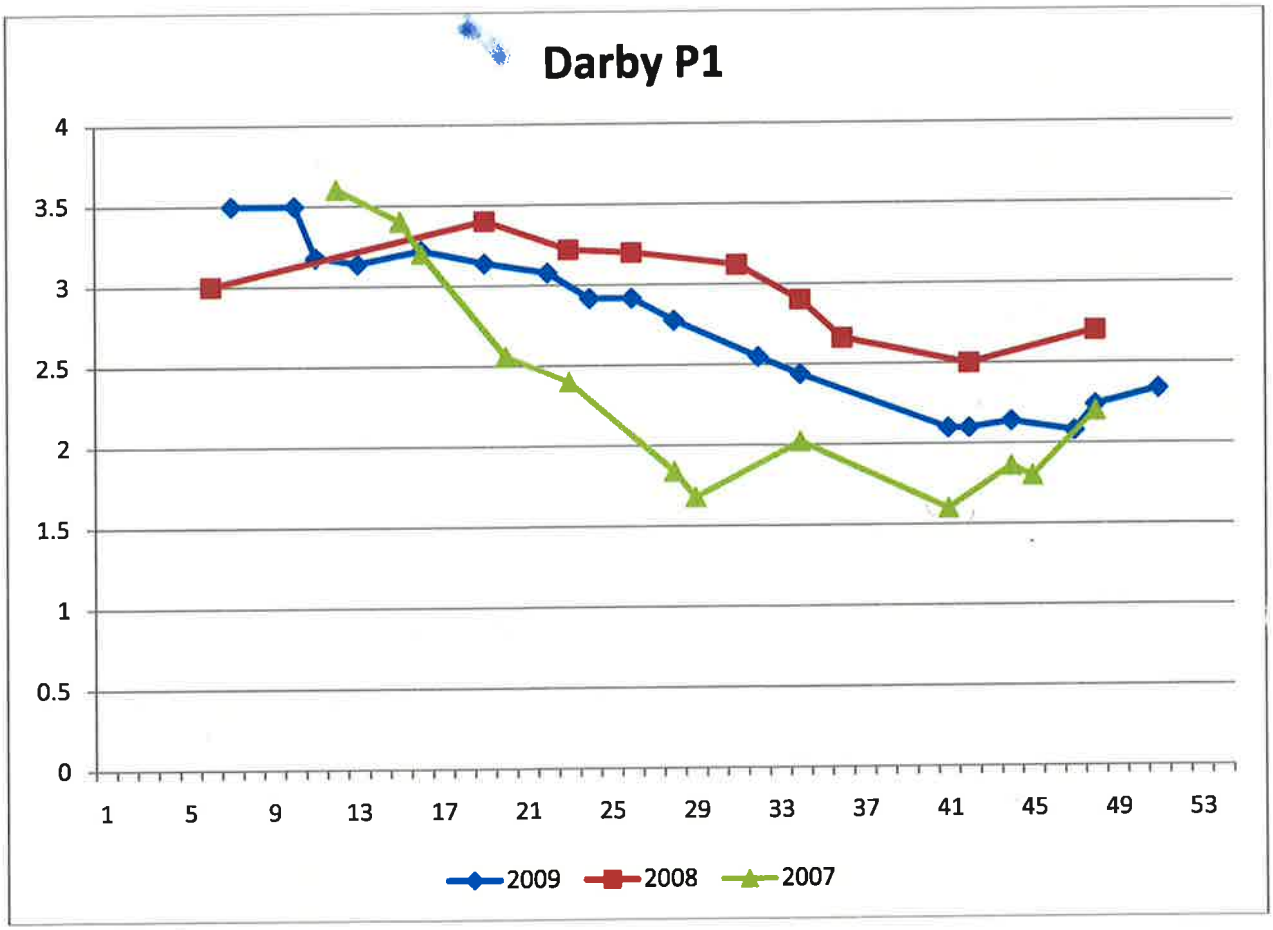
Week #	Desired water level	2010 Date	Actual Water level Staff reading	Notes
		Jan.		
		Mar.		
10		9		Open ditch to lake ASAP
		Apr.		
		26		Closed Flap
		May		
		12		Turned pump on 5/18 - Both pumps on
		22		1 pump OFF. 5/28 - Pump OFF
		June 1		Pump on 6/7 - Pump OFF?
		15		Pump on
		July 7		Pump OFF
		26		Pump #2 on
		30		Pump #2 Found not working. Turned pump #1 on
		Aug. 1		Pump #1 still running
		Sept. 13		Pump #1 on. Pump 2 still not working!
		23		Pump OFF
		28		Pump on
		Oct. 1		Pump for churness (1 pump)
				Open ditch to lake b4 ice

Pump for churness before big duck
He wants water a week b4 Big duck starts.

- 1 pump not working @ Darby (ditch side)

Unit: Darby Pool 1

Acres: 200
2009 Activity: High water was released in March. Water was pumped in in November.
Draw Down Years: 2007 – gauge moved over winter resulting in inaccurate water levels goals, so low water & evapotranspiration led to mudflats in July, rain events in August reflooded unit. 2003 or 2004?



Unit Goal: Provide resting and foraging habitat for migratory birds.

Objectives: Provide a hemi marsh rich in invertebrates and decrease P. Loosestrife infestations.

Strategies: Manage unit at full pool

Management Strategy Constraints:

Repairs Needed:
East dike along Pool 4 needs redone. - bad erosion + rat holes on slopes

C.P. Pool 2

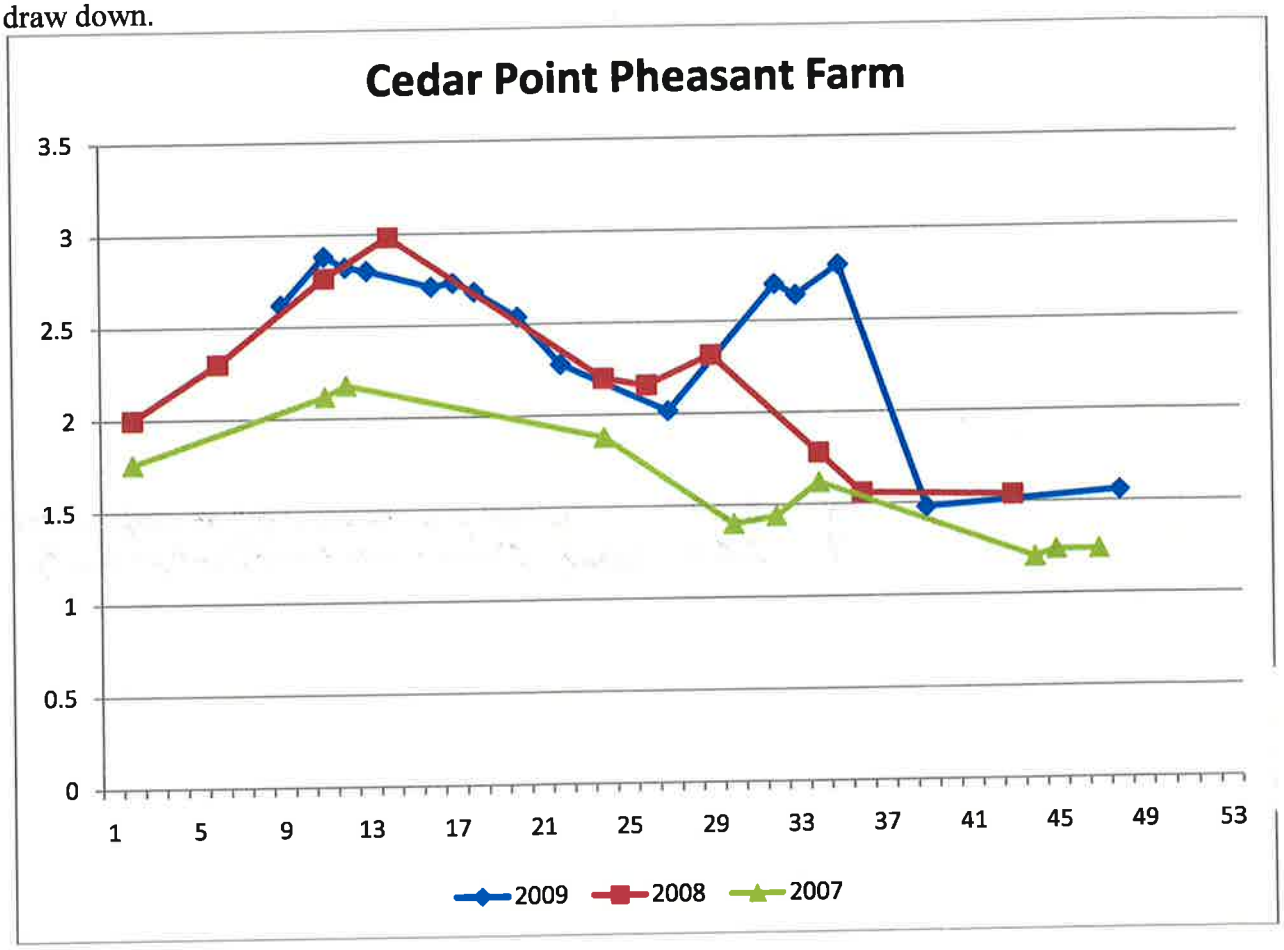
Week #	Desired water level	2010 Date	Actual Water level Staff reading	Notes
		Jan.		~~3/8 2.760~~ ~~3/17 2.52~~ 49¼"
		Mar. 8	2.76	
		17	2.52	49¼"
		Apr. 4/6	2.68	
	2.7			
		May		
		June 1	3.60	Trumpeter Swans w/ 6-8 cygnets, 2 eaglets?
		8	3.68	opened gate to pos/-4" to keep water out of
		9	3.02 (closed)	Toledo Water Plant property
		July		
		Aug. 2	2.60	
		11	2.30	
		Sept.		
		Oct.		

Unit: Cedar Point Pheasant Farm

Acres: 155

2009 Activity: No active management. Common dike between Pheasant Farm and Mallard Club has likely failed due to muskrat damage.

Draw Down Years: 2005- low water & Evapotranspiration led to a late summer/fall draw down.



Unit Goal:

Objectives:

Strategies: Manage for against invasives. Maintain high water levels.

Management Strategy Constraints: Gate to county drainage ditch leaks.

Repairs:

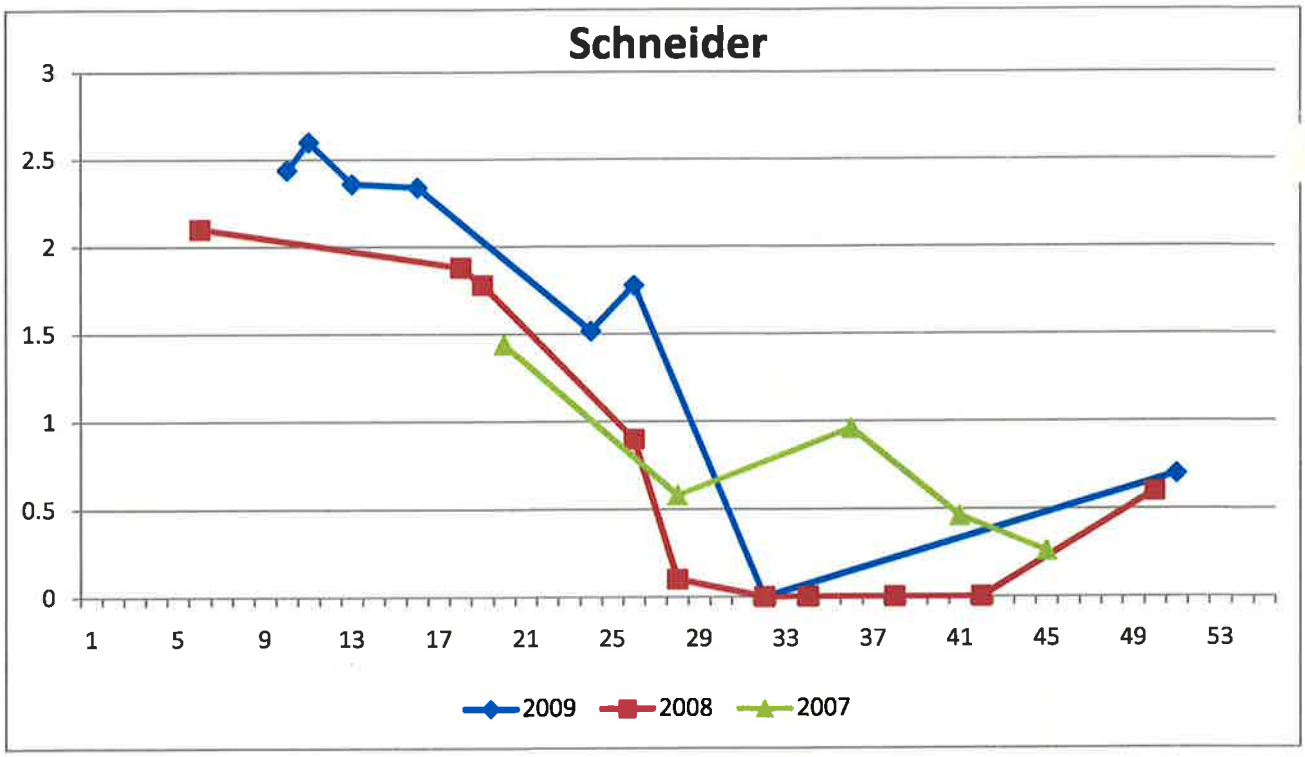
I. West Dike has failed and needs rebuilt. done!

Unit: **Cedar Point Pheasant Farm**

Satellites

Week #	Desired water level	2010 Date	Actual Water level Staff reading	Notes
5		Feb 4	1.78	
		Mar. 17	2.09	Opened to county ditch for drainage 3/18 - 1.76
		22	1.40	Not flowing
		Apr. 4/6	0.40	Closed gate, no more water flow, need to pump.
		May 5		Pumping down
		12		Pumping down from N. end 18" traded pump for thompson.
		19	0.76	
		June 1	0.62	
				Construction begins?
		July		
		Aug.		
		Sept.		
		Oct.		

2011 - Verify screw/flap gate works on both sides.
- May have issues completing E. dike construction
- May need to use portable pump to flood (if county opens drainage ditch to lake, then pump out from there)



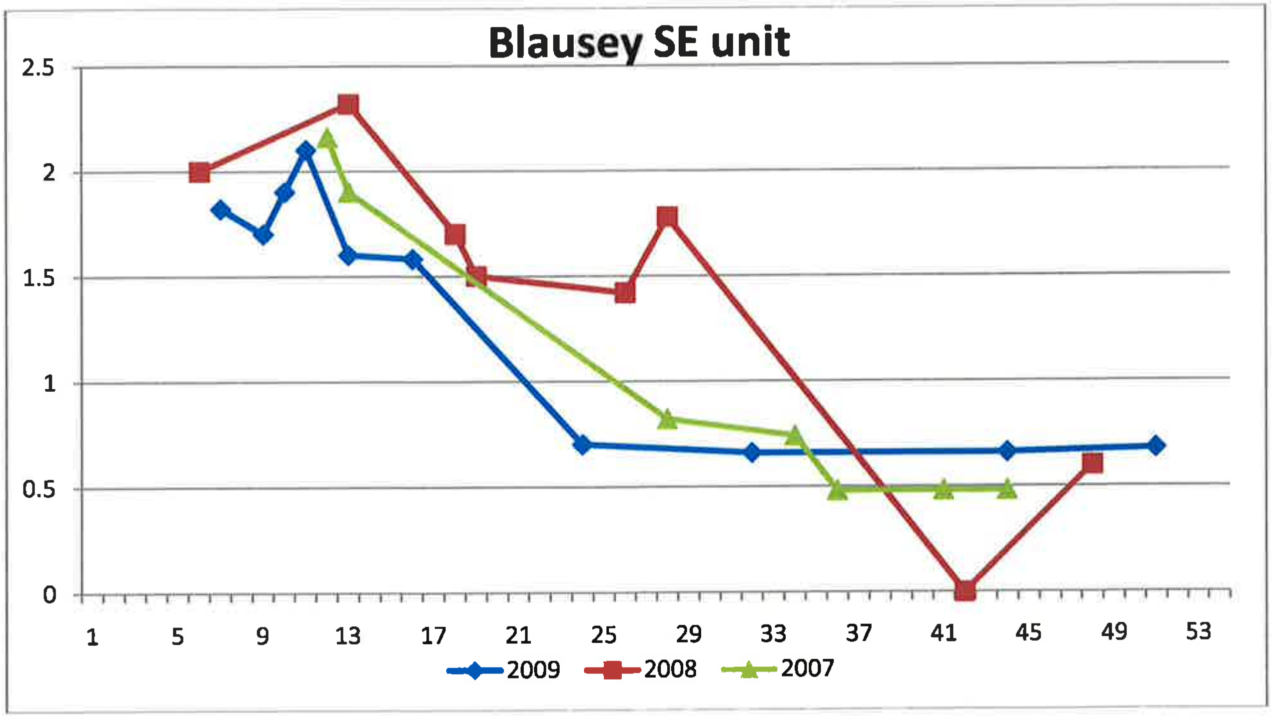
Unit: Schneider

2009 Activity: In March, the top board was replaced with a bigger board to allow approximately 6 inches more water

Draw down years: 2008- Unit was dewatered by mid June for construction on neighbor to west wetland project. In addition, areas of invasives were mowed & disked in August.

Week #	Desired water level	2010 Date	Actual Water level Staff reading	Notes
		3/1	1.64	Tammy mowing 70% of cattail & phrag.
		3/8	1.75	Mow looks good, but maybe too high to kill cattail
		3/29	1.84	Called Rich K. & told him we'd pump H2O into unit & they can turn their pump OFF for now. Call him when done.
		3/30	2.0	Pump off is 6" out of H2O
		4/7	2.10	Pump to be set today, ditch full - Pump Failed
		4/26	2.16	Pumping up w/ Thompsons
		4/28	2.40	Pump off (ditch low) H2O is 6" from top board & 18" from top of box
		5/19	2.34	
		6/3	2.06	
		6/29	1.58	
		7/7	1.14	
		7/23	Below	Measuring pump 2 PI from H2O line

Notes: Pulling boards to remove water should be done carefully to ensure not to overfill drainage ditch and flood neighbor to the east.



Unit: Blausey South East unit

2009 Activity: No active management. Evapotranspiration draw down in June.
Draw Down Years: 2008 & 2007 - This unit fills up over winter & early spring. Evapotranspiration results in a late summer draw down. Construction was completed in 2005.

Week #	Desired water level	2010 Date	Actual Water level Staff reading	Notes
	[illegible]	3/8	0.88	
		4/9	1.32	
	17	4/28	1.56	
		5/12	1.70	
		6/1	1.60	
		7/7	0.9	
		7/23	Below plate	Dry [illegible] Down

Unit: Blausey North East unit

2009 Activity: Pump was periodically turned on in the spring and after rain events. Unit did not hold water.

Draw Down Years: Construction was completed in 2008.

Week #	Desired water level	2010 Date	Actual Water level Staff reading	Notes
				Measure NE corner of box to H2O
		3/8	59"	
		4/9	51 1/4	200. WF
		4/28	50 1/4	
		5/12	49"	
		5/25	58.5"	From Concrete to Water

Navarre

Security Supervisor: 419-321-7557

2009 Activity: unknown

Draw Down Years: In 2007 & possibly 2008, Pool 2 high water was pumped down by plant employees in early April.

Notes: Pool 1 also has pumping capabilities. There are double flaps between P2 & P3. Water cannot be pumped into pool 2. P3 has double flap gates into the Lake and has a pump that pumps out. P3 has a little watershed from the runoff on the west end. The lock combo is 7556.

2007 Levels:

	May 22	November 6	
Pool 1	0.78	?	-(veg looks good)
Pool 2	2.45	1.62	-(lots of ducks-2000-2500, good veg)
Pool 3	0.75	0.18	-3000 – 3500 ducks. Beaver action on south side. Muskrats thick in NE corner and SW side, but not too bad. Veg recovering.

2008 Levels:

	Nov 4
Pool 1	
Pool 2	0
Pool 3	0.10

2009 Levels:

	April 22	Nov. 9	
Pool 1	0.92	1.22	-spring notes: >500 ducks (ruddy, scaup, Gadwall)
Pool 2	2.5" over blue pipe to P3	low	
Pool 3	0.40 (pump on)	9.58	- spring notes: >800 ducks

Week #	Unit	2010 Date	Actual Water level Staff reading	Notes
5	P3	2/5	10.0	(actually reads "0.0") New beaver activity. No eagles
	P2	4/7	1.62	WL was up to ~1.88, TOWF, ran pump last week for carp
	P1, P3	4/7	No readings	WL looks to be OR

new gauge by pump

Other Satellite Properties

Diefenthaler:

2009 Activity: Evapotranspiration led to a draw down in June, except for main channel. Draw Down Years: 2009 & 2008 – Evapotranspiration led to draw down in August except for main channel. It was flooded again in November from rains; 2007 - July, the unit was mistakenly drawndown.

Kontz:

2009 Activity: Unit is currently open to lake levels.. The wetland remained flooded throughout entire season (Spring-Fall). Hairy willow herb was treated on the upland just south of SR 2 and before the woods. Very little hairy willow herb was found along the wetland transitional areas.

Helle:

dike work + H2O structure

2009 Activity: No active management.

March & April 2009: water was across all of unit and base of hill on SE side property owner. Water was in woods all the way to road.

November 2009: water was only in borrow area.

4/8 Water in woods to road. North field east and flooded to road, culvert may be partially blocked, only about 1/5 water flow.

5/26 - Yellow Flag Iris - 5 clusters (1 interior by borrow, 4 ~~irises uni~~ along dike). Water similar to 4/8.

Gaeth-Kurdy:

2009 Activity: Eric maintained subpump in ditch behind his house. This pump is very costly and should be replaced with regular pump.

Boss:

2009 Activity: A stop log structure was installed on the drainage ditch, and the driveway culvert was replaced because it had collapsed.

5-17 Some water in woods + channels, no problems

9/30/10

MS4 WL - NO gauge, marked edge w/ pink pin flag N of WCS

8-12" on high ground, SW part of unit (RCG area)

mostly 16-20" around perimeter of high ground

NW corner - deep area 26-34"

east (+5) of deep area 16-22" & mainly

MS3 North open water 26-36"

FR area 8-12" Cattails - Moist soil - 7"

W side high area -

dry to a very few spots w/ moist soil

W side - to SW corner, large burreed patch 5-8"

cattails 7-10" RCG 8-12, floating mats so effectively shallower

2-4" FR deep 6-10

[illegible] shallow 2" - moist soil

[illegible] E of MS pump

[illegible]" FR 6-11" Aug 8

[illegible] mark [illegible] ex pool on

~~guess <500 ft2~~

JeFF Collins

City Water

419 936 3020

Bill 419-261-5014

CCP Habitat Objectives

1. 1,000 - 1,250 - 1,500 Ac 60% open H_2O 8" - 36"
2. 300 - 400 - 500 Ac 60% dense emergent 3" - 12"
3. 300 - 400 - 500 Ac 60% not dense emergent 3" - 12"
4. 60 - 175 - 300 Ac shallow H_2O/mud flats
5. 300 - 400 - 500 Ac early successional - seed productn.
6. 500 - 800 - 1000 Ac deep open H_2O, 100m wide ≥ 25% >3' deep.
7. 400 - 550 - 700 Ac woods/wooded wetland
8. 600 Ac - scrub/shrub
9. Maintain dikes

ANS- Aquatic Nuisance Species

Pro Hemi-Marsh, con ANS

1. Later + fewer d.d.
2. Mowing under H_2O + flooding
3. Spray Iat for 3+ years + flooding
4. Midseason (July 4th) dr. down + summer reflooding
5. Deep marsh w/ late-August / mid-Sept mudflats.
6. Restorations: (scoured) - starter crop of d. millet

April-May dd good for smartweed/millet, but great for ANS aswell
↓
meaning in a bad way for us!

11.3.10
sm

MS Pump - $1,000/month (~~except Sept-Oct the billed load goes up so it's $2,000~~) $800-1,000/month when running (≈$500/wk nonstop)

MS 5 d.d. → $4000-$5000 (pump down + reflood.)

7A : $550, normal regime $700 - draw down

8A : $250, normal year $500-200 - flooding other units or d.d.

Dief : $250, normal year

Garth : $1212

FU9 : $100. -

Mini : $200

VC ditch : $400

8B : $500 normal yr. 2,000 draw down + reflood

Pool9 : 500 (if H_2O needs added in full) 200-500

FU2 : 400

Darby : 600 normal yr. $2,000 draw downs.

Cedar Pt : $5000 $6000 ~~green~~ - a normal year. $10,000 draw down

Fiscal Year Pumping Costs Comparison

	MS pump	Dief pump	7a	8a	Gaeth	FU9	Butter	Mini	VC -6474	8b	Veler Pmp 2 (P9)	Veler pmp (FU2)
FY 2004	$ 1,119.59	$ 206.48	$ 561.63	$ 697.19	$ 414.56	$ 108.54		$ 153.55	$ 710.50	$ 407.15		
FY 2005	$ 5,101.44	$ 249.10	$ 733.44	$ 229.22	$ 540.53	$ 108.00		$ 299.65	$ 1,358.96	$1,932.44	$ 561.63	$ 386.68
FY 2006	$ 4,952.13	$ 236.65	$ 660.49	$ 488.98	$ 1,020.29	$ 108.72		$ 250.71	$ 574.10	$ 526.98	$ 527.09	$ 424.40
FY 2007	$ 1,970.01	$ 316.21	$ 339.58	$ 244.89	$ 725.44	$ 109.08		$ 162.15	$ 409.77	$ 117.26	$ 250.89	$ 374.66
FY 2008	$ 2,953.77	$ 279.54	$ 480.65	$ 293.26	$ 1,145.14	$ 104.54		$ 289.88	$ 327.91	$ 162.39	$ 208.32	$ 183.86
FY 2009	$ 4,135.61	$ 331.17	$ 406.46	$ 111.88	$ 1,437.99	$ 244.94	$ 244.92	$ 396.50	$ 323.01	$ 488.99	$ 270.54	$ 585.12

	Darby	Cedar Pt	Kontz	Price Pmp
FY 2004				
FY 2005	$ 661.90	$ 4,699.40		
FY 2006	$ 2,040.42	$ 5,401.38		
FY 2007	$ 2,166.89	$ 10,733.42		
FY 2008	$ 1,502.50	$ 170.89	$ 90.90	
FY 2009	$ 1,027.69	$ 2,013.27	$ 272.91	$ 210.42

	Total Costs
FY 2004	$ 4,379.19
FY 2005	$ 16,862.39
FY 2006	$ 17,212.34
FY 2007	$ 17,920.25
FY 2008	$ 8,193.55
FY 2009	$ 12,501.42

1.525763558

Month Bill pd

2009 Fiscal Year Pumping Costs

fy 2009	MS pump	Dief pump	7a	8a	Gaeth	FU9	Butter	Mini	VC - 6474	8b	Veler Pmp 2 (P9)
Oct. 08					$ 9.09				$ 9.09	$ 9.28	$ 13.33
Nov. 08	$ 794.84	$ 9.69	$ 215.67	$ 13.64	$ 9.09	$ 13.64	$ 13.64	$ 67.53	$ 15.86	$ 162.39	$ 9.09
Dec. 08	$ 448.40	$ 9.09	$ 57.79	$ 9.09	$ 22.47	$ 9.09	$ 9.09	$ 78.15	$ 9.09	$ 9.09	$ 9.09
Jan. 09	$ 1,081.59	$ 9.09	$ 14.80	$ 29.10	$ 83.53	$ 9.09	$ 9.09	$ 29.73	$ 9.09	$ 9.09	$ 9.09
Feb. 09	$ 511.32	$ 9.09	$ (94.05)	$ (143.96)	$ 183.26	$ 9.09	$ 9.09	$ 12.32	$ 9.09	$ 9.09	$ 17.53
Mar. 09	$ 43.73	$ 17.63	$ 18.12	$ 17.53	$ 129.35	$ 17.53	$ 17.53	$ 17.57	$ 27.43	$ 27.43	$ 29.47
Apr. 09	$ 2.59	$ 65.06	$ 28.29	$ 29.47	$ (9.00)	$ 29.47	$ 29.47	$ 29.39	$ 56.19	$ 29.47	$ 35.02
May 09	$ 40.83	$ 57.02	$ 35.02	$ 35.02	$ 192.58	$ 35.02	$ 35.02	$ 35.02	$ 57.61	$ 35.27	$ 35.49
June 09	$ 730.82	$ 52.11	$ 35.49	$ 35.49	$ 205.46	$ 35.49	$ 35.49	$ 35.59	$ 38.86	$ 35.49	$ 34.62
July 09	$ 36.20	$ 34.64	$ 34.62	$ 34.62	$ 320.86	$ 34.64	$ 34.62	$ 34.62	$ 38.56	$ 54.68	$ 25.94
Aug. 09	$ 32.92	$ 41.81	$ 25.94	$ 25.94	$ 95.84	$ 25.94	$ 25.94	$ 25.94	$ 26.20	$ 32.93	$ 25.94
Sept. 09	$ 412.37	$ 25.94	$ 34.77	$ 25.94	$ 195.46	$ 25.94	$ 25.94	$ 30.64	$ 25.94	$ 74.78	$ 25.93
totals	**$ 4,135.61**	**$ 331.17**	**$ 406.46**	**$ 111.88**	**$ 1,437.99**	**$ 244.94**	**$ 244.92**	**$ 396.50**	**$ 323.01**	**$ 488.99**	**$ 270.54**

	Darby	Cedar Pt	Kontz	Price Pmp	ODNR
Oct. 08	$518.20	$24.43	$9.09		
Nov. 08	$25.57	$24.43	$9.09		
Dec. 08	$25.75	$24.43	$9.09		
Jan. 09	$26.47	$24.43	$9.09		
Feb. 09	$37.69	$26.29	$28.79		
Mar. 09	$38.14	$29.47	$29.47	$29.47	
Apr. 09	$43.89	$35.00	$35.35	$29.47	
May 09	$43.50	$35.49	$35.49	$35.37	
June 09	$35.97	$34.91	$29.63	$35.49	
July 09	$31.15	$25.94	$25.94	$28.74	
Aug. 09	$30.68	$25.94	$25.94	$25.94	
Sept. 09	$170.68	$1,702.51	$25.94	$25.94	
totals	**$ 1,027.69**	**$ 2,013.27**	**$ 272.91**	**$ 210.42**	

2009 Total Costs

Veler pmp (FU2)	
$	30.25
$	24.83
$	48.84
$	9.09
$	17.53
$	29.47
$	35.02
$	35.49
$	34.62
$	25.94
$	25.94
$	268.10
$	**585.12**

$	**12,501.42**

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Customer Fax: 612-713-5287

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US Fish & Wildlife System
1 Federal Drive
Fort Snelling, MN 55111-4056

ATTN: Josh Eash

SHIP
Ottowa National Wildlife
Refuge
14000 West St. Rt. 2
Oak Harbor, OH 43449

ATTN: Kathy Huffman

Sales Order No: 113666
Order Date: 04/15/10
Cust Code: USFWMNFO1
Salesperson: JERRY

Purchase Order:
Ship Via: UPS GROUND
FOB: COLUMBUS, OH
Customer Email::josh_eash@fws.gov

Line	Part Number	Description	UM	Bin Loc	Qty Orig Ordered	Qty Ship To Date	Qty on Backorder	Qty This Shipment	Qty Act Shipped
001	105-001	Wading Rod, TopSet, 4ft	EA		1.00	0.00	0.00	1.00	1
002	102-006	Adapter, Rod	EA		1.00	0.00	0.00	1.00	1
003	801-023	Staff Gage, Style A, USGS 74.76-78.12ft	EA		2.00	0.00	0.00	2.00	2
004	801-022	Staff Gage, Style A, USGS 71.36-74.72ft	EA		10.00	0.00	7.00	3.00	3

Partial Shipment

Total Weight: 18.800000	Freight:	Date Filled: 04/16/10

Updated 2/2/2010

Ottawa's Mudflat Management Plans
2010

Spring Draw Down

Unit	Start Draw Down	Reflood
MS 4	March 29	May 17 — Failed - working on reflooding
Pool 2b	March 15	September – cancelled
Goosepen	April 1	August 30 – 1 mo. late. Missing teal Migration
Entrance Pool	April 1	October 4
Pool 9 borrow	May 3	August 16 – Acceptable
Darby Pool 4	May 3	Sept 20 – 1 pump still down
* HU 6	March 17	Sept. 13 – 1 day late so far
Pheasant Farm	April 1	– No pumps available

Late Summer/Fall Draw Down

Unit	Start Draw Down	Reflood
Pool 3	July 5	~~August 30~~
MS 8a	August 2	November 15

* Cedar Point P1

– Darby P2 & P4 in progress

Woodies west - in progress

– ~~show~~ Pool

– Pool 1?

– 2b

2N - working on it

* 2S

MS3?

P9 east?

5/6/09 - Doug, Ron, Eddy, Sara

Construction Project Mtg.

MS 3+4 ditch

- look @ gates in barn

MS 3

1-24" stop log 10'

1-36" screw gate 10'

MS 4

1-24" stop log 10' down

1-30" or greater screw gate 10' down

Installation instructions

- need antiseep collar on all structures! Even on corrugated pipe
- adapter for plastic pipe
- Plug MS4 leak,
- Dewater MS3 in July for August construction.

Boss

- cut trench Monday (5/11) put structure in when we get it
- turn in driveway permit today (5/6)
- Put drive in, in next 2 wks

2006?

Reflood P9 East with portable pump
Begin taking water off of Woodies mid June (check construction dates)

Continue 2A pumping - irregularly
Shop woods: remove water
Blausey – operate pump after any heavy rain
Gaeth sub-pump (monitor)

Show pool: monitor vegetation on high ground

July

Continue dewatering Woodies
Maintain moist soil in P2A – may need a portable- will go through 8a first

Monitor all units for low water levels
May need periodic pumping:
- 7AB
- 8B
- MS6
- MS 3
- Cedar Point P1 & P2

August

Mid-month, begin adding water to P2A – will go through 8a first

Monitor woodies to maintain drawdown thru rain events
Monitor all units for low water levels
Monitor MS2 vegetation, flood unit if favorable conditions present mid-month

September
Flood P2A – will need a pump to top off possibly
Reflood woodies
Begin flooding hunt units mid month

October
Pump up 2A if needed

November
Pull board from entrance pool

Black = Pumping Blue = Monitoring

March

Let high water out of most units
2B: Set up pump and take down to 2.3-2.5
2A: Set up pump (from 2B) and take down quickly to 8.6, then slower for shorebirds
Blausey – operate pump after any heavy rain
Gaeth sub-pump (monitor)
VC ditch (set up pump if necessary)

April

Continue 2A pumping – may need to slow down dewatering

Shop woods: remove water
Blausey – operate pump after any heavy rain
Gaeth sub-pump (monitor)
VC ditch (set up pump if necessary)

Monitor all units for high water levels
HU6: check for dabbling depth in unit to determine ideal level & correspond to gauge
MS 3: Evaluate water level for ideal conditions
MS 6: Evaluate water depth for ideal level
Darby P2: Evaluate water depth for ideal level
MS 4: Evaluate water depth for ideal level
MS 2 N & S: monitor water levels for shorebird habitat
Monitor 2C: watch level to be sure it doesn't drop below threshold (1.7) when open

May

Continue 2A pumping - irregularly

Shop woods: remove water
Blausey – operate pump after any heavy rain
Gaeth sub-pump (monitor)
VC ditch (set up pump if necessary)

Monitor all units for high water levels

June

Draw down Pool 9 East for quick construction